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ABSTRACT

In essence, the Policy Institute has explored the contributions that tested educational research (including reputedly viable educational innovations not based on formal research and development) might make to actual school and classroom practice within the context of the Experimental Schools Program's planning. The Policy Institute set itself three tasks--to construct a "research-readiness" spectrum, a "criteria-of-importance' typology, and a "host-readiness" synopsis. A highly eclectic applied-social-science research method was used. This method included commissioning two independent papers, conducting interviews, and searching the literature. What emerged was a reexamination of assumptions about the innovative process. It seems that emphasis on the suitability for implementation of research results and innovations, in an abstract sense, reflects an unconscious prejudice, favoring the perspective of the researcher over that of the practitioner. As a result, the group has been led to place greater emphasis on the characteristics of the potential host. The major outcome of this discussion is a set of questions intended to be used by an evaluator as a means of focusing his judgment of the suitability of potential Experimental Schools grant recipients. Numerous appendixes are included. (Author/IRT)

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SIGNIFICANT EDUCATIONAL RESEARCH AND INNOVATION:
THEIR POTENTIAL CONTRIBUTION TO EXPERIMENTAL SCHOOLS DESIGN

A Report to the
Experimental Schools Program
U. S. Office of Education
Department of Health, Education and Welfare
Washington, D. C.

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I

INTRODUCTION

In the fall of 1971, the Experimental Schools Program of the U. S. Office of Education asked the Policy Institute to undertake a short-term research effort to aid the Experimental Schools Program in thinking through some questions basic to its future operations. In essence, what the Policy Institute proposed to do was to explore the contributions that tested educational research (including reputedly viable educational innovations not based upon formal R & D) might make to actual school and classroom practice within the context of Experimental Schools planning- and operational-grants for system-wide educational change.

The spectrum of educational research and innovation in this country runs from highly tentative hypotheses and validations by laboratory scientists engaged in what is often termed "basic research" to the clinical testing of "action-oriented" practices that appear to have immediate educational pay-offs. In order for the Experimental Schools Program to make optimum use of its limited resources, the staff felt that it ought to have some way of pin-pointing those research results and innovations which are "just ready" for widespread experimental implementation in school settings. As no known typologies existed, the Policy Institute set out to construct one.

At the same time, however, it was clear that a rough typology of readiness would not, in itself, serve the needs of

Experimental Schools. It would also be necessary to set some kind of criteria of "significance" which would distinguish important research results and innovations from trivial. Development of such criteria of significance was the second task laid out by the Policy Institute.

But research results and innovations, even if their characteristics could be discovered and formalized, must be implemented in discrete school settings. Experimental Schools must therefore make discriminating judgments about the expertise and surrounding conditions needed by those who will actually be involved in product implementation. The significance of this last issue can hardly be overstated. The most powerful and persuasive examples of clinically validated research results and innovations can fail to take root if seeds are carelessly scattered or are planted in inhospitable soil. The Policy Institute proposed to construct a rough synopsis of "host conditions" that might guide educational officials in determining what research results and innovations would be likely to "take" with what degree of faithfulness in what settings and under what phases of community attitudes.

It was evident from the outset that the three tasks--construction of a "research-readiness" spectrum, a "criteria-of-importance" typology, and a "host-readiness" synopsis--did not lend themselves to conventional experimental modeling. Given this constraint, as well as the limitations of contract time, it was necessary for the Policy Institute to carry out its work in terms of a highly eclectic applied-social-science research design. The essence of this design was "peer wisdom"--the collective judgments of a number of informed scholars and practitioners.

We began by commissioning two independent papers. The authors were supplied with copies of our proposal and asked to respond to it, in a ten- to fifteen-page essay, in any manner they judged appropriate. The first paper was prepared by David Hawkins, Professor of Philosophy and Director of the Mountain View Center for Environmental Education at the University of Colorado, Boulder. The second was a collaborative effort of J. Myron Atkin, Dean of Education at the University of Illinois, Urbana-Champaign, and Arden Grotelueschen, Associate Dean for Research at the same institution. These papers proved to be significant aids to our thinking as well as important statements in themselves. They are included in this report as Appendices A and B.

We also set out to interview a number of individuals we felt might have important insights on the problems. We spoke with people whose viewpoints ranged from that of a basic researcher to that of a principal or a classroom teacher; from the educational "establishment" to the radical alternative schools movement. The sample was in no sense "randomly" selected or intentionally representative of any particular "populations". No statistical analysis or tabulation of responses was performed. In fact, the format of the interviews and the issues dealt with varied considerably, depending on personalities, individual tastes, and circumstances.

Although the interviews were generally done in an informal, off-the-record manner, we have made use of a number of quotations and paraphrases in the body of this report. Mostly, however, the function of these interviews was to provide us with "brains to pick"--with new insights, ideas, and perspectives, as well as reinforcement (or contradiction) of our own preconceived notions. In this manner, the content of the interviews is inextricably interwoven with our own thoughts in this report. In all, 26 persons were interviewed; their names, positions, and places and dates interviewed are listed in Appendix C.[1]

In addition to the papers and the interviews, we also made use of the available literature. An extraordinary amount of material is available on the general subject of innovation, and a good deal on educational innovation. Surprisingly, however, there is relatively little of direct relevance to the issues of "readiness" and "significance" as they were conceptualized for purposes of this study. A bibliography of materials which we found most useful (although not all are cited in the report) is contained in Appendix F. The results of our literature search are incorporated in the body of this report. Appendix D, which consists of a discussion of some of the factors involved in assessing the demonstrated effectiveness of an innovation, as a part of its "readiness," draws particularly strongly on the literature.

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[1] Our conversations with the interviewees ranged broadly over many issues related to the subject of this study. Many valuable points emerged, some of which do not fit directly into the substance of this report, but which we feel still merit the attention of the Experimental Schools staff. We have taken the liberty, therefore, of excerpting a number of key points from the interviews and including them in Appendix C. It should be emphasized that, while we are grateful to the individuals who generously gave of their time to talk with us, and we acknowledge our debt to them, they are in no way responsible for any statements we have made herein.

Overview

To encapsulate the essence of our thinking on the issues explored, we have concluded that it is not really possible to define the readiness and significance of research results and innovations in the manner that the Experimental Schools Program would have liked. What emerged from the commissioned papers, the interviews, the literature, and our own reflections was a re-examination of the assumptions about the innovative process which led us to our initial conceptualization. It seems to us that emphasis on the suitability for implementation of research results and innovations, in an abstract sense, reflects an unconscious prejudice, favoring the perspective of the researcher over that of the practitioner. Only in a limited sense is it useful to define the kinds of criteria which we set out to establish. This conclusion, and the way we were led to it, are developed in depth in Sections II, III and IV of this report.

What we have been led to is a greater emphasis on the characteristics of the potential host. In Section VI of the report we discuss what we feel are the most important considerations in assessing the receptivity of a given school and community to innovation. In doing so, we have drawn liberally upon the insights we gained from the interviews, as well as the relevant literature. The major outcome of this discussion is a set of questions, intended to be used by an evaluator as a means of focusing his judgment of the suitability of potential Experimental Schools grant recipients.

Finally, in the course of this study we were struck by the recurrence of a number of themes. In the final section of the report (VII) we elaborate upon these themes and draw their implications for Experimental Schools planning, making several explicit recommendations in the process. In the same section we also take a step back from the immediate concerns of the study and examine some important aspects of it in a broader perspective.

The reader should be alerted to two additional portions of the report. First, in our treatment of the questions of readiness and significance, it became apparent that the problems involved in making use of the products of "amateur" research and innovation were sufficiently different from those related to "professional" research and innovation that a separate discussion was required--particularly in view of the Experimental Schools Program's stong interest in "amateur" ideas. Section V is devoted to this topic and defines the sense in which we have used these terms. Second, the problem of gathering information on research results and innovations is also of deep concern to Experimental Schools. In this study, we came across a number of potential sources of information, and in the hope that these may be of use to Experimental Schools, we have included details in Appendix E.

II

READINESS

It is understandable that the Experimental Schools Program should search for "significant" educational research products that are "ready" for implementation. If discovered, such research products could become part of a design for change in school systems with the help of Experimental Schools' funding, and successful educational innovation, with a significant multiplier effect, could be virtually guaranteed.

Because of the tentative plausibility of this innovative model, and its obvious relevance to the perceived mission of the Experimental Schools Program, the staff of the Policy Institute searched far and wide for supporting insights, data, and practices, but our search was not successful. We have reluctantly reached the conclusion that, in the field of educational research, the concept of "readiness"--implying an objective state at which a research result or innovation is ready for implementation--is in many ways a misleading notion. Furthermore, we believe that emphasis on this model obstructs any clear vision of the real issues in improving educational practice.

In analyzing the reasons for this, it is, we believe, important to deal separately with the readiness concept as it applies, on the one hand, to fundamental work on the processes of learning and education (such as that of Bruner, Piaget, Skinner, Gesell, or Bloom) and, on the other, to operational devices and techniques (such as Computer Assisted Instruction (CAI), a new science curriculum, performance contracting, or individually prescribed instruction (IPI)).

Basic Research

Fundamental work generally relevant to the processes of learning, the conduct of education, and the running of schools and school systems is carried out across a broad front in science, encompassing fields from anthropology to social psychology to neurophysiology. The state of knowledge in such realms progresses in a cumulative fashion, according to the internal dynamic of the field. The way in which a science develops has been analyzed by Thomas S. Kuhn in his seminal work, The Structure of Scientific Revolutions.[2] Kuhn describes "normal science" as proceeding under "paradigms"--conceptual achievements which are "sufficiently unprecedented to attract an enduring group of adherents away from competing modes of scientific activity," and which are also "sufficiently open-ended to leave all sorts of problems for the redefined group of practitioners to resolve."[3] He shows how such paradigms provide complete models for scientific practice in a given area, including

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[2] Chicago: University of Chicago Press, Second edition, 1970.

[3] Ibid., p. 10.

"law, theory, application, and instrumentation," and how "successive transition from one paradigm to another via revolution is the usual developmental pattern of mature science."[4] This pattern of advance is contrasted with the situation in the earlier developmental stages of a science, in which general agreement on a paradigm is lacking; several schools of thought compete, none able to deal adequately with observed fact patterns; and activity consists of more nearly random fact-gathering.

In a mature science, theoretical constructs--once they have been accepted as part of the paradigm through experimental testing and peer judgment--are inherently "ready" for application to the solution of practical problems. The physicist's level of understanding of solid state phenomena is such that, based upon theory, he can provide detailed specifications for a piece of integrated electronic circuitry (which may comprise part of a new radar system, computer, or stereo phonograph) and have extremely high confidence that it will perform as it should. This does not imply, however, that he can, or is likely to, search his field for particular aspects of theory which are somehow, of themselves, "ripe." While scientists engaged in fundamental research often recognize and explore practical applications of their work, they do this on the basis of expected payoffs, personal interest, and perhaps creative or "gadgeteering" urges. As long as a proposition has been accepted by the scientific community (generally on the basis of experimental verification and reporting in the literature) as a valid contribution to the state of knowledge in its field, it is available to be applied. Obviously, some aspects of basic knowledge are more relevant to practical problems than others are. In general, however, although there is scholarly debate on whether scientific advance "pushes" technology or technology "pulls" science--or whether such relationships exist at all--there are no distinctions made between aspects of a scientific field which are "ready" for application and those which are "not ready." [5]

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[4] Ibid., pp. 10, 12.

Few of the fields related to educational practice possess sufficiently sophisticated paradigms to be characterized as "mature" in Kuhn's sense. It is much more difficult,therefore, to specify those theoretical propositions which are generally accepted by the scientific community on the basis of experimental verification and thus form a body of knowledge "ready" to be applied. This is not at all to say that the great volume of creative and often brilliant work on such subjects as, for example, the development of intelligence and cognitive skills in early childhood is without practical value. It would be unfortunate to draw such an implication, for modern educational practice has benefitted greatly and continues to benefit from good educational research.[6] What it does mean is that, compared to an area like aviation or even medicine, one cannot move from theory to application with the same high level of confidence that the application will work. Further, it suggests that, since one is applying a proposition (or set of propositions) not linked to an architectonic system--a paradigm--the possibility of misapplication is much greater. As David Hawkins notes, using Piaget's work as a guide to engineering design can easily lead to "mechanical foolishness."[7] Finally, it suggests that, with regard to new educational practices, there will be in the foreseeable future considerable room for dispute on what is scientifically based and what is not. Concern for the matter of scientific support for an innovation must therefore be tempered (although not replaced) by judgments of the innovation's demonstrated effectiveness. Overall, to ask whether a given piece of basic research in a field related to education is "ready" for application in educational practice is to misconstrue the relationships between the two classes of activity.

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[5] Two studies which explore, from different points of view, the relationships between basic scientific knowledge and technological innovation are reported in "Technology in Retrospect and Critical Events in Science," ("TRACES"), Research Institute of the Illinois Institute of Technology, 1968, and Chalmers W. Sherwin and Raymond S. Isenson, "Project Hindsight," Science, Vol. 156 (June 23, 1967), pp. 1571-1577. See also Derek J. de Solla Price, "Is Technology Historically Independent of Science? A Study in Statistical Historiography," Technology and Culture, VI, 4 (Fall, 1965) pp. 553-568, and Edwin Layton, "Mirror-Image Twins: The Communities of Science and Technology in 19th Century America," Technology and Culture, XII, 4 (October, 1971) pp. 562-580.

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[6] For an excellent discussion of how "chains of significant inquiry" have led to profound changes in educational practice, see Lee J. Cronbach and Patrick Suppes (eds.) Research for Tomorrow's Schools (New York: Macmillan, 1969). Several such "chains" are presented as extended examples: (1) "mental tests and pupil classification," (2) "the philosophy of pragmatism as the root of major curriculum reforms," (3) "the learning of arithmetic," and (4) "views on the politics of education generated by historical studies."

See also, Benjamin S. Bloom, "Twenty-five Years of Educational Advance," AERA Journal, May 1966, pp. 211-221; John Platt, "Strong Inference," Science, Oct. 16, 1964; and Benjamin S. Bloom, "Innocence in Education," School Review, May 1972, Vol. LXXX, No. 3.

[7] See Appendix A, p. 85. Cronbach and Suppes, op. cit., also describe how certain research results have been "extrapolated into irrational excesses." See, especially, Chapter 3.

Practical Educational Innovations

The concept of "readiness," as it relates to the utilization of new devices and techniques, has some different connotations. As soon as an innovation (curriculum, piece of equipment, administrative technique, architectural concept) is formalized in such a manner that it can be explained, demonstrated, and made available to persons other than its developer, it is "ready" for experimental implementation--somewhere. A given educational innovation may be quite ready for implementation in one school setting and not at all ready in another. What determines the likelihood of successful adoption of an innovation in a given setting is not simply a matter of objective, measurable characteristics of the innovation. The question involves, to a large degree, the characteristics of the potential user--"host readiness." Many characteristics of the innovation must be considered by the potential adopter--e.g., correspondence to goals, costs, and adaptability. In this context, the "readiness" of the innovation to the potential adopter is a function of his perception of its "proven-ness" or "tested-ness"--the degree to which its effectiveness in accomplishing its objectives (as well as its second-order consequences) can be documented by trials and prior experimental implementations.

There can be no discrete point at which the demonstrated effectiveness of an educational innovation is such that it is suddenly ready for use by all schools. Rather, different schools consider acceptable innovations with varying degrees of "tested-ness." For example, a user predisposed to a tradition of innovation is likely to be receptive to an innovation with a lower degree of "tested-ness" than one who does not possess such a history.[8] Likewise, a user confronted with a pressing problem may be less concerned about "tested-ness" if he finds an innovation which offers some promise of solving his problem--he may be willing to try anything that has a chance of working.[9] These characteristics of the user are explored in detail in the section on "host readiness." Some insights on evaluating the "demonstrated effectiveness" of an innovation may be gained from the literature. These are discussed at length in Appendix D. Meanwhile, let us turn our attention to the question of "significance."

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[8] In the social science literature on diffusion, these types are distinguished into "early adopters" and "late adopters," and their characteristics are explored in considerable depth. See, among others, Everett M. Rogers, Diffusion of Innovations (New York: Free Press of Glencoe, 1962).

[9] This point has its parallel in the way political pressures may force government to undertake technological initiatives in areas where proven technological solutions do not exist. See, on this subject, Wallace S. Sayre and Bruce L. R. Smith, "Government, Technology, and Social Problems," an occasional paper of the Institute for the Study of Science in Human Affairs, Columbia University (New York, 1969).

III

SIGNIFICANCE

It seems intuitively obvious that there are some research results and innovations which are truly important to educational practice and some which are essentially trivial. Nevertheless, if we examine the matter more closely, we are forced to conclude that, like readiness, the significance of an educational innovation is in many ways a situation variable. In seeking to define it abstractly, one is diverted from more fruitful avenues of approach to the improvement of education. As in the discussion of readiness, it is useful to treat separately theoretical (basic) research and operational devices and techniques.

Basic Research

If one returns to the analytical framework developed by Thomas Kuhn, it is evident that the most clear-cut gauge of the significance of a piece of fundamental research is the degree to which it contributes to scientific advance in its field. In Kuhn's model one may distinguish between (1) the advance of normal science, in which significant research results contribute to the whole in an incremental fashion (in the manner of solving a jigsaw puzzle) and (2) scientific revolutions, in which anomalous findings overturn the accepted paradigm and lead to the development of a new one. The most significant -- and most memorable -- research results fall, of course, in the second category.[10]

This criterion, however, only measures the significance of research with respect to the advance of a given field of science. If one shifts perspective and looks at the significance of a piece of research across all of science, or as part of a publicly-funded national R & D program, one is led to employ additional criteria. Alvin Weinberg's famous series of articles on "criteria for scientific choice" deals with the problem at length.[11] Weinberg, actually concerned with how to distribute government funds among scientific endeavors, considers not only "internal" criteria of scientific merit, but also such "external" matters as the degree to which work in one area illuminates problems in other areas, the likelihood of the research being successful in achieving its goals, and the potential relevance of the work to practical problems.

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[10] Two examples from the physical sciences are helpful. Most of the current research in high energy physics -- the substance of which is the completion and refinement of a fairly well-structured picture of the atomic nucleus -- would be considered normal science. On the other hand, recent findings having to do with "quasars" and other unusual celestial bodies do not fit into the accepted paradigm of astrophysics and seem likely to produce some drastic changes in our view of how the universe runs -- a scientific revolution.

[11] Originally published in the journal Minerva, they have been reprinted in Alvin M. Weinberg, Reflections on Big Science (Cambridge: MIT Press 1967).

The absence of paradigms in many fields of basic research related to education complicates the task of assessing the significance of lines of basic inquiry within them. Asking, from the viewpoint of a research sponsor, "what conclusion-oriented [basic] studies are most valuable?", Cronbach and Suppes have pointed out some directions based on Weinberg's classification.[12] Their external criteria recognize the special difficulties in linking basic research and educational practice and stress the importance of potential relevance and "diversified risks" -- the need to maintain balanced research activity across a broad front. Their internal criteria are straightforward and point to characteristics of good research: rigor, enduring commitment, thoroughness, and competence of personnel.

These criteria of significance for basic research are not universally useful. For example, sponsors of research may find such criteria more valuable than do the users of research. Furthermore, an educational innovator -- i.e., a developer of new devices, techniques, and practices -- determines significance on the basis of the extent to which he finds research stimulating, heuristic, and apt. Basic research results are to him not the sole determinant of improvements in his practice, but merely one class of inputs. He judges significance on an *ad hoc* basis. The conventional model of the relationship between basic research and technology does not adequately describe this process, as Cronbach and Suppes recognize:

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[12] *Op. cit.*, pp. 153-166. The term "conclusion-oriented studies" is used in place of "basic research" in this volume to reduce ambiguity. It refers to work directed by the curiosity and judgment of the investigator.

> This linear sequence, with each stage a rational consequence of more basic work, is a crude description and misleading to some degree. There is indeed a flow of ideas from laboratory to field. But there is also a reverse flow. The eddying current is fed by dozens of other sources, not all of them disciplined. A practical innovation may or may not apply an idea generated in pure research. Most fundamental knowledge, indeed, cannot be "applied"; it does not prescribe a suitable practice. It can only stimulate the investigator facing a practical problem to manipulate some new aspects of the school situation and to appraise effects he might hitherto not have considered. What is tried out in developmental and operational work springs largely from inspirations or hunches; those hunches may be suggested by basic studies but are not derived from them. Conclusion-oriented studies are significant for practice if, cumulatively, they help the decision-maker take the right things into account; they are most unlikely to give the decision-maker the blueprint for an effective procedure, in advance of decision-oriented research.[13]

Much the same point is made by Ernest Hilgard:

> The fact that the behavioral and social sciences (with some exceptions in aspects of economics and psychology) are rather weak in their "laws" and "theories" does not preclude their usefulness in technology. Technological innovation often rests quite as much on design and invention as on theory. Consider highway engineering, for example, which obviously has many scientific inputs, and has had a long and respectable place within the National Research Council. Still, something like the left turn lane, which has done a lot to avert rear-end collisions, was an innovation of the last twenty years or so. The "basic science" was rudimentary; the design reflected ingenuity. Pre-stressed concrete is another illustration; little basic science but enormous consequences because of the insight that a column could

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[13] Op. cit., pp. 123-124.

> be turned on its side and used as a beam. The social scientist can use his imagination in the social realm to help in the synthesis of available knowledge to produce designs for community living that will lead to greater human satisfactions; this does not necessarily wait upon breakthroughs in basic social science.[14]

This model deserves further examination. Before we turn to an analysis of it, however, we must deal with the issue of how to evaluate the significance of innovations.

Practical Educational Innovations

As is the case with basic research results, the significance of devices and techniques aimed at serving practical ends depends strongly on one's perspective. From the point of view of one concerned with the improvement of education on a national scale, it is possible to assess broadly the significance of an innovation in terms of its goals, its costs, and its uniqueness.[15] In terms of goals, significance is a function of the innovation's correspondence to national educational priorities. Thus, if improving the reading performance of the disadvantaged is judged to be of higher priority than refining the musical skills of suburban children, innovations aimed at the former goal are of greater significance than the latter. At the same time,

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[14] In a letter from Ernest R. Hilgard to Alvin Weinberg, August 10, 1970.

[15] These criteria are developed in detail in a report prepared by the Educational Testing Service for USOE's National Center for Educational Communication, Marion G. Epstein, et al., "Selection of Products for Focused Dissemination," (Princeton, N. J.: ETS, 1971). See Appendix D for a more extensive discussion of this report.

ceteris paribus, innovations which are aimed at broader audiences, which are unique in their fields, and which have lower implementation costs (monetary and non-monetary) are of greater significance. None of these factors is simple, however. Agreement on educational goals -- at least at the level of detail where they are likely to be operationally useful -- is problematical. Implementation costs are likely to vary from one situation to the next. And the size of the population which the innovation may reach is a partial function of each of the other factors.

More important, however, is the fact that the model of the innovative process which presumes that this national perspective is the crucial one is, to its detriment, "over-rational", and "inadequately user-oriented".[16] It fails to recognize the importance of the practitioner's point of view. The alternative is a user-oriented model described by Hawkins as well as Atkin and Grotelueschen, and alluded to repeatedly by the interviewees, in which there is less emphasis on judgments of significance at some central point, and greater provision for individual judgments at the grass-roots level, based on individually-defined goals. Beyond the specification of broad organizing principles, such as those we present in Section VII, one simply is not as interested in characterizing educational innovations as "significant" or "insignificant," as "ready" or "not ready". More is achieved in the long run by not attempting to impose such judgments, but simply by showing concern for the grass-roots conditions under which new ideas may take root and flourish. As we will note in Section VI, qualities in the school-community complex, which we have termed the "host," will be strong determinants of the type and scope of innovations called for, and will as well, presage their viability.

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[16] Essay by Atkin and Grotelueschen, Appendix B, p. 100.

IV

THE LINEAR MODEL

We are led to consideration of the model of the innovative process in education, within which "readiness" and "significance" are conceptualized. Our conviction that this model requires re-examination is reinforced by the fact that both essays which were commissioned in connection with this study deal with it at length, and similar points were made in many of our interviews.

The model at issue posits a kind of unidirectional flow from the domain of research into the domain of practice. Termed the "Design Mode" by Hawkins and a "linear view of educational change" by Atkin and Grotelueschen, it describes a process in which a stock of fundamental knowledge generally related to the field of education is generated through curiosity-directed basic research. Applied research, in turn, draws upon this stock in search for solutions to practical problems. Such solutions as are found by applied research ("hardware" devices and/or "software" techniques) are brought to the prototype stage through development, then tested, evaluated (possibly modified), and disseminated and diffused.

As both essays recognize, this model is borrowed from the conventional view of the innovative process in the industrial, aerospace, military, and (to some extent) medical spheres. In looking at the way a new bomber or missile is created, the model seems to make intuitive sense, and its employment might yield some insights in non-educational areas.

There are many reasons to suspect that it is generally misleading, however, and particularly in the field of education, there is considerable question as to its utility as a representation of reality and a guide to action.[17]

David Hawkins' analysis proceeds much more directly from the viewpoint of educational practice than does our own. Drawing upon examples of possible research-readiness criteria, Hawkins convincingly argues that the "Design Mode" is not only misleading, but actually inimical to real educational innovation. In the practice of education, he asserts, there is an absence of any real national consensus about the fundamentals of means and goals. There is, writes Hawkins, a "partisanship inherent in the Design Mode for crisply defined limited objectives in limited time with predefined tests of achievement . . . [and] such operational definitions only avoid the deeper issues, postpone the need to face them, and narrow the conceptual framework to one within which they cannot even be formulated."

Hawkins is led to propose "a virtual reversal" of the "Design Mode." Educational innovation should instead be viewed as a grass-roots phenomenon "with external antecedent research considered not as a source of innovation but only -- more modestly -- a possible resource for it." The point is not far different from that made by Atkin and Grotelueschen: " . . . it is our view that 'development' in education takes place most effectively at the level where education occurs . . . usually in the classroom." Quoting from Ronald Havelock's comprehensive study of the processes of innovation, dissemination, and knowledge utilization (in which the major focus is on education), the authors assert that the engineering model (read: "Design Mode") is "over-rational," "inadequately user-oriented," and that it sees the professional practitioner (in this case, the teacher) as "essentially a passive client."[18] More appropriate to educational innovation is the "'problem solver' approach" in which "user need" is the governing consideration. Locally-developed particularistic solutions which draw upon outside sources of ideas are favored over "highly generalizable, transplantable products."

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[17] Several individuals, including David Krathwohl, Lawrence Cremin, and John Goodlad, who provided comments on our first draft, brought out strongly the difficulties with the linear model in non-educational as well as educational areas. Hawkins (Appendix A., p.83) also notes its weakness "even in territory sacred to the design mentality," (the internal combustion engine) and Layton, op. cit., discusses in some depth his conviction that the commonly-accepted model of science-technology relationships is really inadequate in most realms.

This point of view was widely echoed among our interviewees. Most replied, when confronted with an open-ended question on how they would go about developing criteria of readiness and significance, that the questions were simply not the right ones to be asking. Those few who did not explicitly reject the form of the questions still failed to provide meaningful direct responses. Some examples may help to convey the tone of these replies.

Alvin Eurich, whose many years of high-level involvement in educational change give him a cosmopolitan perspective on the subject, was one of those who accepted the form of the question. In articulating his response, however, he invariably tended to stress not the characteristics of the innovation, but the characteristics of the potential user. Readiness, to paraphrase one of his points, is vital to successful innovation; but the readiness of the school system to accept the whole concept of innovation as a way of life--a factor defined by local conditions, particularly the presence of dynamic leadership--far outweighs in importance the state of readiness of a given product or innovation.

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[18] Ronald G. Havelock, Planning for Innovation through Dissemination and Utilization of Knowledge, (Ann Arbor: University of Michigan Center for Research on Utilization of Scientific Knowledge, Institute for Social Research, 1971).

Peter Buttenwieser, a sensitive and innovative school administrator who must grapple with these issues on a day-to-day, nitty-gritty basis made a related point sharply: "We are not dealing with a technological problem," he declared. "The crucial point is not the question of whether an innovation is ready to be moved . . . educational research is not providing the input for change . . . . The kinds of innovations the system calls 'experimental' are really just 'gut-feeling' good ideas."

Edward Carpenter, the creative and highly pragmatic Headmaster of Harlem Prep School, put it another way: "As far as innovations go, we develop our own theories and practices based upon our own philosophies."

Finally, the developer of a new and highly regarded science curriculum, Robert Karplus, a physicist at the University of California, Berkeley, observed that the state of readiness of his own product was not the governing factor in determining its success in various environments. In fact, he casually admitted that he really was not clear on how to judge the readiness--or even the "tested-ness"--of his own product and, in a sense, its widespread dissemination at a given point in time resulted from a combination of special circumstances rather than a conscious decision. "The notion of taking an innovation and transplanting it whole into an experimental school," he declared, "simply doesn't make sense."

In hearings before the House Subcommittee on Science, Research and Development, more than one year ago, Hendrik D. Gideonse offered testimony, the essence of which in large measure parallels our own thinking. Gideonse proposed a dramatic increase in the proportion of Federal resources devoted to behavioral and social science research. In elaborating upon the proposal, he gave his thoughts on what an appropriate management posture should look like:

> . . . Instead of attempting to administer research and development to realize the full technical capabilities suggested by the continuously advancing state of knowledge in the behavioral and social science, those responsible for R & D in these fields should attend primarily to the several different markets they are trying to serve. This management posture focuses . . . first on the clients of R & D, and secondarily on the performers. It causes attention to real market conditions as contrasted to assumptions about the inherent logic of the improvements being sought or the potential power of the knowledge being created. It focuses first on the service needed, then on the science which might help.[19]

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[19] Hendrik D. Gideonse, "Elements of National Science Policy: A Perspective from the Behavioral and Social Sciences," statement submitted to the Subcommittee on Science, Research and Development, Committee on Science and Astronautics, U. S. House of Representatives, Sept. 11, 1970, pp. 45-46.

Gideonse sees three major benefits as deriving from this posture: (1) the discovery that in social services, as opposed to other uses of technology, the buyer of the product is rarely the ultimate client, and therefore great care must be taken to insure that the needs of the ultimate client are borne in mind; (2) devotion of greater attention to the decentralized character of social R & D; and (3) focus on the "value-imbeddedness" of social R & D, and, therefore, attention to the "development of alternative approaches, products, or techniques leaving ample room for local, State, regional practitioner, or client choice in adoption or utilization."

What has been written to this point might well be interpreted as, in some sense, anti-intellectual or anti-scientific. For the logic of "grass-roots innovation" in education might be to reify innovative hunches developed in grass huts. To the contrary, it is our belief that, in some areas of basic concern to education, the linear model must be increasingly adopted if major breakthroughs are to occur in educational practice. It is not inconceivable, for instance, that the work of brain chemists and physiologists in relating basic biological and biochemical processes to learning capacity may be of major and universal significance to the field of educational development in years to come.[20]

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[20] An especially valuable overview of such research, including a substantial bibliography, appears in Charles Spooner and Arnold Mandell, "Psychochemical Research Studies in Man," Science, Vol. 162 (December 27, 1968), pp. 1442-1453.

All that is being contended in this paper is that, in terms of the present state of the art of educationally-related R & D, the linear model offers nothing of immediate significance and readiness that is free of contextual and descriptive perversities. One further point: concentration upon the linear model tends to emphasize the feasibility of product production rather than its intrinsic worth in relationship to felt educational need.

V

"AMATEUR" RESEARCH AND INNOVATION

Our discussion of readiness, significance, and the linear model addresses itself chiefly to professional R & D -- that conducted in a scientific or technological context and supported for its intrinsic worth in advancing either the state of knowledge or the dimensions of practice. We have defended the notion of encouraging grass-roots innovation and we have stressed the role of the practitioner in advancing educational practice. At the same time, however, we have not yet dealt with a matter of importance to the Experimental Schools Program -- namely, the evaluation of the readiness and significance of "amateur" research and innovation. What we mean by "amateur" educational research and innovation is that class of outputs produced by people whose major activity is the practice of education, not formal research and development.[21] This is a tricky matter and one on which there is little precedent to give us guidance.

Obviously, there can be no meaningful distinction between amateur and professional basic research. All basic research, by definition, must be subject to the same rigorous standards of scientific judgment; the integrity of the scientific enterprise depends upon it. Indeed, some of the most significant (paradigm-breaking) scientific work has come from "amateurs". Einstein -- it will be recalled -- was an obscure patent clerk in Switzerland when, in 1905, he first published his Theory of Relativity.[22] Today's equivalent of Einstein would probably have some difficulty in obtaining a research grant -- at least prior to publication of his theory.[23] Once ideas reach the realm of scientific literature, however, it is basic to the progress of science that they be judged on their own merits, irrespective of their source. Having become part of the stock of basic scientific knowledge, amateur research results are then subject to the same conditions with respect to application as professional results.

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[21] Our use of the terms "amateur" and "professional" is consistent with the way they have been used in discussions with the staff of the Experimental Schools Program and is not meant to reflect any evaluation of the worth of the respective classes of research and innovation.

The picture is somewhat different in regard to "amateur" innovations -- new devices and techniques which have direct application to educational practice. In a very basic sense, the point we have been trying to make throughout this report is that real educational change will only come about when every practitioner is encouraged to become an amateur innovator. We feel strongly -- and we are supported by our two essayists -- that differences in needs, goals, and constraints at the local level demand such an approach. At the same time, we recognize that some of these locally-developed innovations are likely to be significant beyond their original settings -- if only one could discover them and make their existence more widely known. What, then should be done to promote the dissemination of these innovations, given that the normal channels are not open to them?

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[22] To be sure, he had been graduated from the Swiss Federal Polytechnic School in Zurich in 1896.

[23] In this context, the new practice of the Basic Research Branch of the National Center for Educational Research and Development of the U. S. Office of Education is praiseworthy. In their program of "targeted research" in "Anthropology and Education" and "Economics and Education", the USOE staff insists that proposals be read "blind" with no names or institutions on them in order not to discriminate against the "mute, inglorious Einsteins". We are grateful to Professor Lawrence Cremin of the Center for Advanced Study in the Behavioral Sciences for bringing this policy to our attention.

Informational channels of some types are already available to amateurs. USOE's own National Center for Educational Communication has for some years operated its ERIC (Educational Resources Information Center) computer data bank, which has provisions for non-professional inputs, and the output of which is widely available. Many state education departments also have staff members whose specific responsibility it is to gather information from practitioners on grass-roots innovations and share this information with other practitioners. Professional and "underground" organizations, through workshops, conferences, and journals perform similar functions.[24]

One could, without much difficulty, explore the operations of each of these systems and design a dissemination system for amateur research which might be more effective in reaching out for information and distributing it to the appropriate recipients. It seems to us, however, that in doing so one rapidly approaches a point of diminishing returns. Broader dissemination in itself is not the answer. There is a psychological break between the mechanistic character of most dissemination systems and the organic nature of the kind of system needed to make innovative designs really meaningful to recipients. Such an organic system -- revolving around the central theme of peer interaction -- is embodied in the teachers' center concept. Within its framework, one can visualize teachers informally exchanging innovations, and making personal judgments on what is suitable for implementation in their classrooms on the basis of their own individual goals, problems, needs, personalities, and teaching styles.[25]

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[24] See Appendix E for more details on information sources.

In this view, there is no role for a centrally-located communication nexus which would gather grass-roots ideas, sort them according to readiness and significance and distribute them to the field. The most appropriate model for dealing with amateur research is that of the open market. The readiness and significance of innovation are measured by their success in this market. If one wishes to improve the health of this system, the point at which intervention is required is not in regulating the substantive flow of information, but in fostering environments congenial to informal exchange.

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[25] See the discussion of teachers' centers in Section VII.

VI

HOST RECEPTIVITY TO INNOVATIONS

The thrust of the Experimental Schools Program for comprehensive change is aimed at improving educational practice throughout the school system rather than at piecemeal reform. It seeks to utilize innovations and relationships in such a fashion that they will have a broad and mutually reinforcing effect. At the same time, the sense of our argument in the first five sections of this report has been away from the linear model and toward a localized, grass-roots conception of educational change. In recognition of these factors, we feel that the general question of the "host climate"--those characteristics of the host which affect receptivity toward educational innovations in a broad sense--requires particularly careful attention.

It is useful to consider the host as being composed of two parts--the "school" and the "community." The "school" segment includes the individual classroom, the building, other schools in the district, the district administration and staff, intermediate districts, and sometimes the State Education Department. The "community" includes all other resources and forces which have or demand an influence upon local educational policy makers. James B. Conant pinpointed the symbiotic relationship of these two elements, in his foreword to Sumption and Engstrom's, School-Community Relations:

A New Approach:

> The nature of the community largely determines what goes on in the school. Therefore, to attempt to divorce the school from the community is to engage in unrealistic thinking, which might lead to policies that could wreak havoc with the school and the lives of children. The community and the school are inseparable. 26

In this section, we examine those characteristics of schools and of communities which may determine the degree of hostility or hospitality toward comprehensive school innovation. We are forced to measure host receptivity impressionistically. Adequate tools of applied social science are simply not available. But with the help of some existing social science insights, we have been able to construct a series of questions which, if asked of potential recipients of funding, might help Experimental Schools to determine the "readiness" of the host to carry out systemic innovative activities. These questions appear at the end of this section. In order to uncover the subtle relationships and potentialities that exist within each situation, the type of thorough examination suggested by these questions may require the presence of a trained and sensitive observer on the site of a prospective grant recipient for a longer period of time than has traditionally been deemed necessary by granting agencies. This matter is discussed later in this report.

The Tradition of Piecemeal and Discontinuous Change

In past practice, national support of educational change

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[26] New York: McGraw-Hill, 1966.

has been largely categorical rather than comprehensive in nature. While special curricula (New Math, PSSC Physics) or new methodologies (IPI, team teaching, language labs) were supported by federal financing and subsequently adopted by some schools, they did not necessarily spread to other schools, even in the same district. Demonstration Schools (often connected with a teaching institution) implementing such innovations were set up within communities with the specific expectation of change by diffusion or by "seeping down." While such efforts produced some salutory results, there was reason for disappointment in the limited impact of the innovative examples. Much of the problem lay in the fact that inadequate attention was given to the instrumental subtleties of diffusion processes, and scant recognition was made of potentially inhospitable conditions in the recipient school system and its setting. As a result, other schools and administrators were able rightly or wrongly to claim "lack of relevance" and to say that what worked in "x" situation would not work in theirs.

Piecemeal changes in methodologies and curricula have been adopted in many schools. The aim of these innovations has been better academic preparation for students. Certainly in part, this was a response to the 1957 challenge of "Sputnik," which triggered a national crash program in educational experimentation. But the innovations were introduced in a climate often set by preoccupied schoolmen who were increasingly harrassed by the widespread pressures of burgeoning enrollments, shortage of first-rate teachers, the "knowledge explosion" of the 20th Century, financial burdens, unhappy parents, dissatisfied learners and angry taxpayers. And few schools were equipped to implement even piecemeal innovations. Frequently teachers who had been trained in traditional methods had to take over classes in New Math (or another subject) and communicate it to equally unprepared students and parents.[27] The result, as evaluated by Dr. Jerome Notkin, Director of the Science and Math Learning Center at Hofstra University, was the "we have spent millions of dollars on making changes but the more we change the more we remain the same . . . the crash programs have left a residue, but hardly enough to be worth the cost."[28]

In Planning and Providing for Excellence in Education, Morphet, Jesser and Ludha have noted that such limited leavening was ineffective for broad change. Being superficial, it "left the essential structures of both schools and the school system unchanged while everything around them [was] changing."[29] New pressures upon the schools have emerged and must be taken into account in planning for change: student discontent in increasingly visible form, integration requirements, demands for community control, drug use on school grounds, shrinking tax-bases and state-aid funds, legislation such as New York's "Taylor Law" and increased teacher-organization demands. Increasingly, current literature on education points to the need to go beyond federally induced changes in limited categorical areas and to adopt wider, deeper reform postures in the fields of school governance, learning approaches, teacher education and professional life-styles, and school-community interactions. The centrality of the teacher's role is beginning to be widely recognized as well as the need to utilize the surrounding community as both resource and agent in planned change.

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[27] Dr. Benjamin Fine has an insightful article on the problems this causes in his nationally syndicated newspaper column for November 11, 1971 (carried in the Syracuse Post-Standard).

[28] Ibid.

[29] Denver: Publishers' Press/Monitor, 1970.

Community Expectations of Schools

Any meaningful definition of "host climate" must begin with basic community views of the functions of schools. Whatever deference is paid to the notion of socially defined multiple goals for education, schools and school systems have rarely gone beyond professionally formulated statements of desired curricula to promote the intellectual skills and moral attributes of pupils: e.g., the three R's, academically oriented and/or vocationally oriented courses, patriotism, personal health and safety, etc. Viewed sociologically, however, it is obvious that schools presently serve--as they have in the past--a number of societal needs that are not effectively encompassed in officially sanctioned statements of school purposes.

First of all, schools are sorting devices. In almost Platonic terms, they have sorted out (often with invidious racial and economic overtones) "artisans" and "soldiers" from more academically oriented "philosopher-kings." But what happens when the increasingly technical and professional needs of the society, as well as the rising status expectations of parents for their children, prompt new kinds of sorting considerations? Is not part of the current attack upon the educational status quo the result of a rapidly growing awareness that schools and colleges are sorting on an increasingly dysfunctional basis?

Unfortunately, in this context, emerging and competing societal values make current winds of change highly variable. Some of the most poignant aspects of the sorting issue may be perceived in the judicial dicta of recent court cases like Serrano, Rodriguez, and Richmond. For here, Constitutional morality and many lower-class hopes find themselves in direct opposition to widely held higher-class (often inarticulate) assumptions about the sorting functions of school systems. To put the matter squarely, it is not unreasonable to predict that, if the integration issue is "solved" by court-induced metropolitanism, and if the fiscal base of schooling is roughly equalized throughout the land, private schools will emerge in profusion to protect the educational base of partly subconscious middle-to-upper class expectations about the sorting function of schools in our society.

A second socially determined expectation, infrequently articulated by any except radical reformers, is custodial. From the point of view of working or overwrought parents, schools are, in part, day-care centers. It is difficult to assess how much of the current pressure for infant day-care centers and nursery schools is a function of formal research in developmental psychology (e.g., emphasizing the importance of the early years for later educability), and how much is simply due to increasing pressures from working mothers at all economic levels for child-custodial services at earlier ages. And at a later stage of custody, high schools and colleges become allies of organized labor not only in keeping young people from being economically exploited but in keeping them out of the labor market and off the streets. Any educational reforms suggesting elaborated work-study programs or substantial modifications of compulsory attendance laws must take into account such existing economic vested interests.

A third set of socially defined uses of schools is cultural and ceremonial. In many parts of the United States, powerful community groups like volunteer firemen or American Legionnaires demand high-school bands for official parades, or high-school auditoriums for meetings. For much of America, school plays, concerts, and athletic contests have been major (sometimes the only) continuing catalysts of community cultural life. At budget time, booster clubs have made clear that the formal curriculum of schools is only one of the bases for the school system's claims upon public revenues. What impact TV, race-tracks, bowling alleys, and other commercial entertainment and recreational facilities have had in recent years upon these traditional expectations of school functions has not to our knowledge been calculated. But it is not inconceivable that some of the loss of public support for the public schools in recent years has been due to shifts in public satisfactions in selected fields of culture and kitsch.

In many communities, a major function of schools is health- or social-service related. School nurses and free or subsidized school-feeding programs are examples of such functions. That these may be education-related functions, no one will doubt. But they have implications that go far beyond schooling. As children come increasingly to be viewed holistically, and as parental expectations of schooling increasingly become related to parental economics and convenience, these broader, school-based health and other social services may be expected to increase.[30]

All of these powerful and shifting realities must be placed along side of conflicting public values about the content of the school curriculum itself. Although widespread agreement exists about the intellectual, cultural, and political-socialization functions of schools, great differences exist within and among adult populations as to what is legitimate under each of these general rubrics. For example, is "sex education" a defensible "cultural" activity of schools? Is "politics" an acceptable subject for purposes of political-socialization? What is the proper curricular role for "Puerto Rican Studies," "Black Studies," "American Indian Studies," etc.? The "Old Math" was good enough for my father, why should my son learn the "New Math"? Is music a "frill"?

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[30] The Educational Policy Research Center of Syracuse University Research Corporation has studied this trend as it is emerging throughout the nation in a monograph entitled, The Potential Role of the School as a Site for Integrating Social Services, prepared for the Bureau of Research of USOE (December 31, 1971). The study cites examples of success in improving the quality of life for neighborhood residents (e.g., John F. Kennedy Center in Atlanta), but points out the multi-level adminstrative problems inherent in combining the federal social services. It also notes the problems encountered with community involvement in decision making, with the comment that project planners all indicated that members of the community were responsive to the creation of integrated delivery systems but their patterns of participation included opposition and criticism as well as cooperation.

Finally, in a political and economic world mightily influenced by the behavior of groups and organizations, America's school systems provide employment and life-style stability for millions of teachers, administrators, bureaucrats, school-bus drivers, educational-materials manufacturers and salesmen, maintenance personnel, and food processors.

In this context of multiple goals and expectations, it would be simple-minded as well as politically disastrous to view the functions of schools, including experimental schools, in terms of the educational needs of young people only.

A major criterion, then, for judging the viability of any Experimental Schools proposal is its demonstrated recognition of the multiple goals and expectations--implicit and explicit--that the surrounding and supporting community holds for the school system. This recognition must be accompanied by some contextual understanding on the part of the educational leaders of the tactics, machinery, and trade-offs associated with consent-building for new goals.

In our estimation, no Experimental Schools grant should be made where the proposal has not been supported by a clear and frank appraisal of existing and shifting community expectations of the local school system, and how the grant, if awarded, would fit into, stay apart from, or modify those expectations. An assessment of the accuracy and sophistication of such an appraisal by the Experimental Schools staff must depend on independent, in-depth analyses of school-community relations.

The Community Role

A substantial literature exists on community receptivity to educational innovation. Appendix F gives an idea of the quantity of research in this developing field. Although most of the literature is case-specific, some rough generalizations (what psychologists call "theorettes") of a cross-community nature have emerged:

(1) Widespread citizen perception of the need for change is the major key to innovation-receptiveness in a community's educational system. In the words of E. S. Savas, "problems not perceived as problems by the mass public are problems not acted upon."[31]

(2) Since educational reform involves a variety of "clients" and affected interests in the larger

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[31] E. S. Savas, "Cybernetics in City Hall"--An address. Published in Science, Vol. 168 (May 29, 1970) p. 1070.

community (e.g., parents, industries, taxpayers' leagues, politicians, patriotic groups, community-power groups, etc.) a substantial awareness of this reality by educational innovators--and a demonstrated capacity on their part to achieve political agreements, and, in a non-invidious sense, to strike political bargains--are predictive indices of effective educational change.

(3) Early involvement of a co-creative (rather than just a nominal) nature of the various groups inside and outside of the schools who will be affected by a projected innovation is more likely to promote the achievement of the goals sought than is late involvement or no involvement.

(4) The existence of strong and stable community leadership (political, economic, professional) as demonstrated by past actions on critical civic issues in fields other than education (e.g., health, urban renewal, parks and recreation, social services) is a bellwether sign. Obviously, past successes in educational reform are even stronger attitudinal signs of future innovative promise.

(5) Educational leadership that works through existing patterns of school-community relations--if these relations are reasonably

felicitous--is more likely to innovate successfully than if such relations are ignored or bypassed. Piggy-backing on the shoulders of a successful PTA, a cohesive group of school volunteers, or a live-wire Model Cities task force is more likely to produce innovative success than trying to work through newly created and separate instruments of change.

(6) In areas where a limited number of media (newspapers, TV stations, radio stations) dominate news and editorial opinion, the broad-mindedness and civic-mindedness of the media leaders are strong indicators of innovative potential for education as for all other fields of community development.

(7) Except for those glorious moments when fresh leadership can effectively sell great dreams, most communities move incrementally. The capacity of innovators to tailor their rhetoric and the size and scope of their projected program to traditional community values and tolerances is an essential ingredient in successful project implementation.

Taken together many of these conclusions reinforce a pervasive movement in our culture toward what is often referred to as "participatory democracy" or "citizen participation."[32] Before these value-directions are engraved in stone, however, a few words of caution are necessary.

Citizen Participation

Before the days of Community Action Agencies and Model Cities, few efforts were made to secure broad-based citizen participation in administrative decisions which materially affected their lives. The federal government's recognition of this element as essential to basic change and the subsequent development of citizen task forces, committees, board representation and other devices, which created a network of communication among the poor and previously unorganized segment of our people, have set a significant force in motion. This network has become more sophisticated, through practice in Model Cities and other programs, and citizens are able to perceive and reject sham models of participation which do not allow real assurance that their ideas and concerns will be taken into account.

Broad community participation in educational innovation is clearly both necessary and desirable. There is an easy rhetoric, however, which contends that if one simply takes into account all of the existing citizen groupings in a community, they constitute a positive force for change. We as a nation are now experienced enough to know how inadequate that perception is. One must look upon the involvement of citizen groups in planned change as a "mixed bag."

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[32] Especially helpful to our understanding of this area were: Sherry R. Arnstein, "A Ladder of Citizen Participation," American Institute of Planners' Journal (July 1969) and Alan J. Hahn, Community Decision-Making Systems, Report prepared for MIDNY Project Workshop on Community Organization Process--New Potentialities (April 15-17, 1970, Lisle, N. Y.).

Obviously, schools may profit from involving other educative instruments of the larger community (museums, industry, unions, etc.) in the processes of teaching and learning--and sometimes with a minimum of friction and misunderstanding. But increasingly, schools have been plunged into the politics of group involvement as citizen organizations and parent organizations have asked for direct involvement in school decision-making. Here the real role of educational leadership is to guide involvement through the inevitable conflict situations which ensue, while heeding the wise advice of Harlan Cleveland: "Do not get caught in the web of tensions you observe." It is no easy task to develop group esprit around positive risks rather than negative certainties; but effective leadership presupposes this ability. It is not unrealistic to recognize that years of careful conflict management may be a preface to implementation of planned change.

The School Role: The Importance of Leadership

The importance of the leadership factor relative to the other factors which comprise the host climate is difficult to overstate.

Many communities can testify to the alteration of civic style caused by the introduction of charismatic new leadership. Such leadership may make its presence felt at many points in the school system, but one role emerges as pivotal. The major burden often falls upon the district superintendent, who will clearly need to possess a high degree of political skill, vision, and humane perceptiveness. This is a tall order:

> Unless he has the tact, the power of persuasion, the political savvy to involve constructively his board, his principals, the teachers, parents, students, mass media, interest groups, universities, other social agencies of government, federal and state officials, private philanthropy, and contending forces of civic passion, he might as well have stood in bed. We find that modern educational planning tends to be a contact sport. It is not drawing designs for auditoriums and gymnasiums (although that is part of it); it is not determining how teachers are to be assigned and utilized (although that, too, is part of it); it is not remaking the curriculum (although that, too, is involved). It is, instead, a form of social combat in which myriad interests are struggling over the fate of their proudest possessions: children, status, income, autonomy. Victory goes, as it always goes in politics to the great resource-aggregators and the great combiners--those who have the catalytic knack and the Midas touch; who know the trick of discovering or of manufacturing uncommon commonalities (common purposes with an exciting edge).[33]

It is our feeling that, despite its ratings on other aspects of a host-receptivity typology, any school-community candidate may be considered viable for comprehensive innovation if a trained observer can locate sources of responsible energy either latent or importable into the system.

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[33] Stephen K. Bailey, "Educational Planning: Purposes and Power," Public Administration Review, Vol. 31, No. 3 (May-June 1971) p. 349.

Of course one of the key functions of higher-level educational leadership is to energize the components of the school system. Change in the educational system must proceed from the involvement and advocacy of teachers and administrators alike. The centrality of the teacher's role is increasingly recognized in the current literature. In the words of Postman and Weingartner: "There can be no significant innovation in education that does not have at its center the attitudes of teachers, and it is an illusion to think otherwise." [34] Similarly, Sarason, in The Culture of the School and the Problem of Change, emphasizes that, "among all the aspects of the school culture, none is as important as the quality of life and thinking in the classroom and [in] that the roles of teacher and principal are obviously crucial." [35]

Our interviewees pointed out that flexibility of the teacher-learner interaction is vital to education. Several--from widely differing perspectives--felt that, where this relationship is sufficiently valued, compulsory attendance laws could be abolished. Freedom of teacher-learner units clearly demands flexibility from buildings, their operating norms and their administrators. If successful learning can be done in hallways, the janitor cannot be permitted to exercise veto power on the grounds that it interferes with his standard operating procedure. If relevant and successful learning can be accomplished in local museums, industries, historical sites or any other possible community setting, administrators must not veto trips on the grounds that learning outside the usual setting is unwieldy to administer or cannot be easily monitored.

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[34] N. Postman and C. Weingarten, Teaching as a Subversive Activity, (New York: Dell Publishing Co., 1969) p. 33.

[35] Seymour B. Sarason, The Culture of the School and the Problem of Change, (Boston: Allyn and Bacon, 1971) p. 235.

Willingness to permit teachers to plan and carry out team or individual learning situations, or even an entirely indigenous curriculum which dumps required textbooks, is one characteristic of an administration open to innovation. Continuing that support under fire is probably another. Teacher ingenuity in devising ways to facilitate learning in their wide-range charges is a major indicator of a school which is focused on the learning process rather than on meeting artificial goals. A developmental approach recognizes plateaus, delays, fresh starts, and progress but may not fit well into a standard grading or grade-level setting.

When the teacher is assisted in growth toward maximum potential, innovations come naturally--this point was made in some depth in our interview with Peter Buttenwieser. In this view the role of the principal is crucial. It is unrealistic to consider classroom change without taking into consideration the kind of support and flexibility which will be necessary on the part of the building administrator. Unless he works with teachers to create a climate in which teachers can recognize and actually work out learning problems, and take responsibility for their actions, he fosters authoritarianism instead of open communication.

In an authoritarian setting, teachers do not willingly assume the risks inherent in "innovating." William Wayson has characterized the principal as a primary risk-taker. The innovative principal, he says,

> must be secure enough to let the teachers experiment . . . he must be able to weigh and re-direct inputs and feedback . . . be a resource gatherer . . . be able to develop rewards for the types of behaviors necessary for the new school . . . have diagnostic skills for working with adults and enabling teachers to behave as responsible adults . . . [be] able to utilize strategies for gaining outputs from teachers that will foster education for children. 36

Wayson contends that successful models for single-building operating norms must be extended to include central office positions and on into teacher and administrative training situations.

Sarason, too, points to the necessity of examining the formal and informal relationships between a school and the education complex which surrounds it--the "school culture." One who would change the schools, he says, must thoroughly understand the actual functioning of their traditions and structure, and the pattern of their currents of interaction. He points out that such understanding

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[36] William Wayson, Schools for Educating Responsible Citizens for 2000 A.D., an address to the Convention of the American Educational Research Association, Los Angeles, February 6, 1969. Mimeo.

must go beyond the individual school building behavioral and programmatic style and extend to the role of central administration, the superintendent, the board of education and the State Department of Education. This set of relationships, he observes, leads directly "into the legislative process and politics in the narrow sense."[37] Sarason separates efforts to change schools into two approaches: (1) those imposed from the top down, through the administrative hierarchy, and (2) those which start by altering the condition of the teacher. The latter method has most recently been advocated by the new element in school change, community groups. His thesis stresses the fact that changing the complex school culture requires a conception which encompasses both approaches and presumes the simultaneous use of different tactics and strategies.

Although we have not focused directly upon the largest group directly affected by educational practice--students--we have done so indirectly. It seems clear that, in an open and flexible approach which emphasizes the process of learning, conducted by teachers and administrators who individualize their approaches in as flexible a setting as possible--including all resources in the community at large--the students also will contribute to the planning and implementation of innovations. They also certainly provide the ultimate test of "readiness": if the innovation is "ready," it

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[37] Sarason, op. cit., p. 234.

"takes," and only a learner can make this process, like a vaccination, visible.

The indicators of host readiness which have been discussed relate to a variety of clients who feel a stake in the educational process. The implementation of systemic change requires acknowledgment of the multiple elements which impinge upon successful innovation.

Host Readiness Questions

Based on the foregoing discussion, we have assembled a tentative list of questions, the answers to which might assist an evaluator in judging the host readiness of a school system and community. We are hesitant in introducing these tentative questions because of the danger that they might be taken out of context as some form of operationally-ready instrument. These questions do not constitute a rigid framework for assessment. Rather, they are intended as a guide to the judgment of potential receptivity, a means for assuring that the relevant factors are considered. Taken together, these questions should lead to a "personality profile" of the school and the district. From this composite profile, in which the whole is greater than the sum of its parts, converging patterns of hospitality or resistance should emerge. Any site visitor's success in using these questions as points of departure will become manifest in his ability to combine hard social science data on the one hand (fiscal/attendance/census data), and soft (impressionistic/subtle/

judgmental/attitudinal) data on the other.

The questions are divided into three sets. The five questions of the first set we have termed "key" or "critical." In broad brush, they encompass much of the material treated in the two subsequent sets. Their purpose is not to substitute for or short-cut the more detailed questions which follow. Rather they are intended to serve as a guide to a "quick-look," aiding perhaps in preliminary screening and suggesting areas which might require more intensive evaluation later. The second and third sets of questions, labeled as pertaining to schools and communities, respectively, are not as neatly sorted as this division implies. Each set contains some questions which deal in part with the other, but we have classified these as "school" or "community" questions according to where we felt the primary emphasis in answering them should lie, recognizing that some ambiguity remains. A final caution—we do not consider these 54 questions an exhaustive list. The informed reader can undoubtedly modify or add to this list, and the site visitor should do exactly that as the situation demands.

"Key" Questions

1. Is there evidence that school district and school building leadership (particularly the latter) have developed or have the capacity to develop strong support from community leaders and school staff?

2. Is there evidence that what Gabriel Almond calls the "attentive public" perceives a need for educational change?

3. Is there evidence over the previous decade that the community and especially the school system has responded creatively and forcefully to perceived social needs?

4. Is there evidence that an administrative climate exists within the schools that fosters teacher participation in important educational decisions and provides support for responsible teacher risk-taking?

5. Is there evidence that the existing school board and the educational and political superstructure of the state government are sympathetic to, or at least not restrictive toward, educational experimentation?

Questions Relating to Schools

1. Have teachers discussed among themselves the priorities which must be set based on the limitations of the grant award?

2. Have provisions been made in the application for a variety of programs and approaches, to accommodate individual, ethnic, and cultural differences in both teachers and learners?

3. Is there a recognition among teachers and principals of the need for conscious diagnosis of the schools' problems in order to formulate tentative solutions (i.e., adapt innovations) and to keep their objectives in sight as solutions are implemented?

4. In the application, is there a built-in, on-going mechanism for planning evaluation and revision of programs and approaches as new needs or conditions emerge?

5. Is the scope of the proposed program of innovation city-wide? Does it include "controversial" subject matter?

6. Did/Does the school or school system attempt to involve others in planning the proposed program of innovation? Through what mechanism? At a decision-making level or in advisory capacity only?

7. Have each of the prime participants (institutions, individuals, fund supplier) articulated:(a) their best estimate of the time frame required for demonstrated success; (b) the priorities for new services (which are goal-related for both grantee and grantor); and (c) the operating unit or person responsible for implementation of innovations or services?

8. Has willingness to adopt K-12 comprehensive innovation (or adapt existing large-scale or grade-linked efforts) been manifested in the past? Are there existing inter- and intra-school links (for curricular and method carry-over to new levels)? How long have they existed? How well do they work (as estimated by teachers, pupils and administrators)?

9. What level of financial support has Central Administration given in the past to innovative approaches in individual schools? Was it continuing or short-lived?

10. Has the school system or schools within it demonstrated willingness to support or seek out and adopt innovation in curriculum, administration, etc.? (a) how much and for what time period? (b) any consistent pattern of frequency of adoption or support demonstrable? (c) what degree of change was involved, i.e., grade level, multi-levels, interschool?

11. Has the school system any evidence of evaluation procedures for previous or existing innovative projects within its district? (a) how comprehensive? (b) any follow-up effort after evaluation?

12. Does the school board attempt to lead the community or does it yield to currents of opinion? (as reflected in minutes of board meetings or reports in the public press?)

13. What kinds of provisions for in-service training do the schools have?

14. Have any city schools had experience in working with Model Cities or Anti-Poverty agency on joint school projects?

15. What degree of interaction exists between schools and local university or regional educational labs, if any?

16. What is the relationship between the superintendent and (1) the Board of Education; (2) citizen pressure groups; and (3) opinion leaders?

17. Are the school buildings set up for open classroom or school without walls techniques? Could they be adapted to new learning approaches?

18. Do parents volunteer and work in school as classroom, playground, and lunchroom aides or library assistants?

19. Are home visits by the teacher required? How well do teachers understand the demographic characteristics of the area?

20. Do principal and teachers request input from parents and students on curriculum and teaching approach?

21. Does the general "ambiance" of the school buildings indicate teacher-pupil hostility or friendly relationships?

22. Has the community recently experienced large scale open racial or ethnic hostility? Did it close the schools? What were the consequences in terms of school operations?

23. Does the school have dress and/or behavior codes? Did students participate in their creation?

24. Have teachers prepared their own curricula and supporting manuals? How sophisticated and relevant are the materials? How do students using them compare with students using required materials?

25. What kinds of new techniques (IPI, team teaching, work-study, school without walls, etc.) have teachers in the system used? What degree of success do they feel in using them?

26. Do teachers place value on individualized approach? Are teaching aides and para-professionals available?

27. How do teachers in individual schools characterize their principal: aloof, authoritarian, cooperative, feedback-sensitive, willing to give teachers responsibility, supportive, etc.?

28. Is the school system characterized by structural rigidity and hierarchical decision-making (buck passing rather than teacher or building decisions). Is there a teacher decision-making apparatus, such as a "cabinet" of elected teacher representatives? Do teachers and principal work well together?

29. Is there evidence of (a) building administrative flexibility toward teacher-centeredness (teacher-devised curricula and school building space use, etc.), and (b) administrative delegation of responsibility?

30. Are there strong teachers unions? What are their goals? Do they attempt to include educational or integration goals in their contract bargaining? If there is more than one union, are the goals in conflict?

31. What role, if any, do students play in school policy?

32. Have the groups most likely to resist or support innovation been identified by the educational leadership?

33. Are the education leaders knowledgeable about change strategies and conflict management? Have they secured professional public relations help in presentation of innovation and developed a working relationship with identified opinion leaders, media, and organized citizens?

Questions Relating to Communities

1. Is there a substantial body of hard evidence present to indicate that the community perceives a need for educational change? (Visible as media coverage, presence of organized pressure groups, frequency of meetings for such groups, size and breadth of moment for change.)

2. Has the community made an effort to define the scope of the need? (Pressure for curricular or teaching-method change from minority or other groupings, calls for new school buildings or new arrangements of grade-level grouping within buildings. Meetings of citizens around educational needs or causes.)

3. Do community forces for change understand the problems inherent in securing it? (Discussion of strategies for meeting problems, recognition of need to involve broad spectrums for planning and consequent problems of delay, misunderstanding.)

4. Is there a dominant political culture visible within the community? How might its characteristics affect the acceptance of systemic school innovation?

5. Is there an air of apathy toward education? (Low level of PTA attendance, little concern about adequate finances, few (or no) militant groups).

6. Have any civic groups or businessmen been brought into school decisions? How? (Junior Achievement, youth summer employment efforts, after school employment, etc.)

7. Are perceptions of "solutions" fixed or mobile, comprehensive or narrow (a focus on piecemeal projects)? (Room for suggestions from teachers, parents, pupils, and administrators.)

8. Do successful innovative programs in non-school settings exist in the community (museum out-reach, symphony or other musical out-reach, repertory theatre or theatre for youth)? Are these programs actively backed by the local power structure? Do the schools utilize such resources? To what degree?

9. Are there educational resource centers in or near the community (regional laboratory, university, etc.)? What is the community's attitude toward them? What is the relationship with the local school system?

10. Have the public schools been brought into cooperation with non-educational agencies to solve social problems of the city? Do any of the schools now share (or plan to share) space with federal or state social welfare, medical, etc., agencies?

11. Do media attitudes show (a) high degree of interest in local education; (b) demonstrable influence on innovative wishes of schools; and (c) if available, attitude toward other community innovations (artistic, cultural, etc.)?

12. In looking at general community attitude toward change, what fate has been met by previous comprehensive innovative attempts? (Educational, housing efforts, cultural resources drives, etc.) What is the general education level of the community?

13. In examining community power structure leadership factors, (a) who are the most visible opinion leaders; (b) are they members of the "power elite" or of minority organizations; and (c) are they involved in education at all? As participants (school volunteers, board of education) or critics only?

14. What are the fiscal inhibiting factors for comprehensive educational innovation in the way of: (a) other spending commitments of the community -- municipal service costs (present and envisioned), new construction, etc.; (b) the community's ability to self-generate more funds for educational support (eroded tax base, low general economic or salary scale composition of population, rate of shifting of upper-income population, etc.); (c) per-pupil expenditure (local); and (d) state funding level (current and projected)?

15. How inhibiting to comprehensive educational innovation are political procedural factors and patterns: (a) fiscal dependency status of school system; (b) planning commission review, referendum requirements, municipal legislative constraints; and (c) degree of school system independence from governmental links re: (1) purchasing; (2) Board of Estimate and Budget approvals; and (3) bonding for new schools?

16. What opportunity does the planning unit have for options beyond the usual single district boundary? Has any base for metropolitan or regional planning been established by educational leaders of the area? Do other metropolitan or regional structures exist in the political law enforcement or health care units?

One additional note on the general problem of determining "host readiness". The site visitor may wish to assess the general polarization level of the community. Guides to such an evaluation include:

1. Measuring degrees of observable polarization related to proposed change in areas of:

    a. Critical mass of citizen involvement (intensity and size) at two extreme poles, plus size of "undecided middle".

    b. Attitudes and roles of community influences (as defined by power group memberships) and where they place along the spectrum of polarization.

    c. Prevalent media attitudes (local and national), their degree of intensity (frequency of comment, polarity of comment) and their "weight" in the community.

2. Examining history of past attempts at educational innovation in the district for indications of major elements causing polarization in each case.

    a. Integration-related

    b. Cost of proposed change

    c. "Bigness" of change (number of students and/or schools involved)

    d. Reaction to physical location of new school

    e. Content of curricular innovation (i.e., sex education, social studies courses which included politically current "controversial" issues, etc.)

VII

IMPLICATIONS

Organizing Principles

If one shifts attention from "research and innovation products" and "host conditions" to organizing principles around which responsible educational innovation might be built, agreement (at least, rhetorical agreement) among the educational specialists interviewed is substantial.

Four basic principles emerge. Does the projected program of innovations expressly take into account:

(1) the ineluctable reality of individual differences among teachers and among pupils -- in capacity, in teaching or learning style, in temperament, in aspiration;

(2) the largely untapped or unrecognized educative resources of the larger community that, if appropriately exploited, might provide for a continuing and ventilated educational interchange between schools and society -- throughout and beyond formal schooling;

(3) the psycho-sociological principle that effective and lasting change in education occurs only when locally interested groups are catalyzed to interact as creative partners;

(4) the centrality of the teacher in significant and lasting educational improvement?

These organizing principles are hardly original. Lawrence A. Cremin in his perceptive review of "Curriculum-Making in the United States"[38] traces some of these to the post-Civil War years. And relevant intellectual strands are, of course, not limited to this country. From Plato through Pestalozzi and Comenius to Dewey, educational theorists have articulated propositions that are friendly to our present formulation. What is new is context and salients of emphasis.

(1) Individual Differences

Within the general context of our previous statement on expectations and goals, and according to the views of those interviewed, the major organizing principle for determining the direction of Experimental Schools grants should be the extent to which the proposal is aimed at accommodating individual differences in the educational process. Whatever rhetorical deference is paid to the reality of individual differences among teachers and among pupils, most American education at all levels appears to be organized around contrary assumptions. Classroom architecture[39] and class sizes tend to be fairly uniform.

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[38] Teachers College Record, Vol. 73, No. 2, December 1971.

[39] One of the most exciting and provocative interviews was with Roger Smith of Curtis-Smith Associates in Boston. Working largely at the elementary level, Curtis and Smith have developed designs for the "internal environment" of schools that are stunning aesthetically and functionally, and that foster "individualization" in the learning experience.

Teacher certification and pre-service and in-service training are highly uniform within and among states. Texts, work-exercises, teacher manuals, tests, and pedagogical techniques tend to assume uniform teaching and learning styles and subject-matter progressions for all pupils. Grade/age patterns are widely standardized. Notions of classroom discipline tend to revolve around assumptions of common personality characteristics (including common propensities for fidgetiness) on the part of youngsters.

The irony is that this elaborated paraphernalia of uniformity does in fact promote or admit wide variation in teaching styles and pupil performance. But it does so frequently by assigning invidious distinctions to all those whose teaching styles or learning accomplishments deviate from accepted norms. The result is that deviant teachers, perhaps some of the most creative, leave the system; and both high-achievers and low-achievers among the pupil population are consumed with boredom on the one hand, and/or a sense of personal failure, on the other. Most of the educational reform literature of the past two decades has dealt with these issues. It is the central concern of Silberman, Holt, Reimer, Leonard and others who have railed at the joylessness and ennui of contemporary schooling. For as long as traditional structural and procedural rigidities obtain in education, both teachers and pupils will find their individual differences subordinated to a series of stultifying abstractions and operational regimens. Of the 26 persons interviewed in connection with this study, all identified the issue of individual differences as a central concern of meaningful educational change.

There is more than faddism at work here. Individual differences in the context of education are no longer matters of faith or inference. Dewey's concern with the "particular child" has now received scientific underpinnings recently elaborated by Lee J. Cronbach and Richard E. Snow in their *Final Report: Individual Differences in Learning Ability as a Function of Instructional Variables*[40] and by Glenn H. Bracht, in "Experimental Factors Related to Aptitude-Treatment Interactions".[41] Furthermore, the seminal work of Robert Glaser at the University of Pittsburgh's R & D Center has cleared vast areas of previously unmapped territory in the general field of what Glaser calls "Individually Prescribed Instruction" (IPI). What emerges from this research is *not* a series of operational programs and tested innovations to implement "individualization".[42] What emerges, as Cronbach had suggested earlier, is simply a paradigm.[43] The goals implicit in this

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[40] Stanford: Stanford University, 1969.

[41] *Review of Educational Research*, Vol. 40, 1970, pp. 627-645.

[42] Although Glaser's work in "IPI-Math" has been widely tested and disseminated through the good offices of Research for Better Schools, the regional education laboratory located in Philadelphia. Evaluation of IPI-Math is still going on, however, and we know little as yet about "Hawthorne" effects or side-effects of IPI.

[43] See Lee J. Cronbach, "The Two Disciplines of Scientific Psychology", *The American Psychologist*, Vol. 12 (1957), pp. 671-684.

"aptitude-treatment-interaction" paradigm may be served by a wide variety of techniques and attitudes; the essential issue for Experimental Schools policy is the centrality of the paradigm itself.

That "individualization" has become an increasingly visible goal of modern schooling can be seen from even casual reviews of educational reform literature. Terms now abound like "team teaching", "differentiated staffing", "individually prescribed instruction", "open classrooms", "programmed instruction", "teaching machines", "computer-assisted instruction", "culture-free-tests" (the *à la carte* menu is long and varied). But as we noted in the first section of this report, none of these innovations meets formal tests of predictable social engineering in education. For example, many of these recent experiments and developments do not assume as wide a variation in teacher abilities and intellectual styles as in pupil abilities and styles -- a questionable assumption at best. And in terms of systematic validity, they suffer from all of the other limitations noted in Section I of this report. This does not mean that such innovative practices and products are not to be tried and adopted in experimental school settings. It only means that *caveat emptor* must prevail.

All that is being urged at this point is that a major criterion for judging an Experimental Schools proposal should be its conscious attention to the development of ways and means of accommodating and fostering, in the context of educational improvement, individual differences among both teachers and pupils.

(2) The Educative Resources of the Larger Community

A second pervasive theme that emerges from the interviews is intimately related to the first. It was almost universally held that one way to accommodate and nurture individual differences -- particularly among pupils -- was to tap the largely untapped educative resources of the surrounding community and thereby to promote a continuing and ventilated educational interchange between schools and the outside world. Again, this is hardly a new insight as Lawrence Cremin has noted,[44] but it has frequently been honored only in the breach.

This particular organizing principle has a number of sub-themes:

-- breaking the lock-step of course scheduling so that blocks of time might more easily be available for pupils and teachers to be away from the school building in educative pursuits in the larger community;[45]

-- bringing increasing numbers of talented persons from various walks of life in the larger community into the classrooms, auditoriums, and workshops of the schools in order to supplement the contributions of teachers in a host of ways;

-- taking far greater account in curricular and instructional policy of non-school influences on a child's development -- including the pervasive impact of TV, radio, magazines, comic books, newspapers, parents, and peer groups;

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[44] Op. cit.

[45] As the Pierce County, Washington, Experimental Schools Program is already doing.

-- discovering new kinds of educative talents and facilities in the larger community that, with modified compulsory attendance laws, might be surrogates for schools for the benefit of "drop-outs" and "turned-offs" who look upon regular schools as prisons;

-- finding ways of making school buildings into resources for the total surrounding community through the promotion of adult-education courses, parent-teacher-student colloquies, multiple-service centers (e.g., including library, health, and welfare), independent study facilities;

-- discovering pools of volunteers (college students, housewives, older siblings) who might assume tutorial-remedial functions in both the cognitive and affective areas of pupil development;

-- developing a far more productive and rationalized "vertical" interchange between secondary education and post-secondary education in an area, in order, among other things, to reinvigorate what has become an almost morbidly repetitious and purposeless 12th grade throughout American secondary education.

These are simply a sample of sub-themes. Underlying all of these specifics is the proposition that schools and educational personnel have been far too removed from the excitement and the educative talent of the larger community.

Experimental Schools, then, should favor those applications that contain programs designed to promote a continuing and ventilated educational interchange between the formal school system and the outside world.

(3) Creative Partnership

The third major organizing principle is that, to be successful, planned change in education must involve the interaction of many locally interested groups in both creative and instrumental processes.

Much of the rationale for this proposition has already been set forth in Section VI of this report. The basic contention is that the most fundamental enemy of educational reform has been the authoritarian-hierarchical model of school governance that has inhibited both vertical collaboration (among school boards, superintendents, supervisors, principals, teachers, and students), and horizontal collaboration (between school personnel on the one hand, and related officials and publics in the larger community).

Since this issue has been treated at length in our previous analysis, all that needs to be said here is that those school systems or combinations of school systems that have proven themselves capable of insinuating a spirit of cooperation into participatory procedures involving educational innovation deserve special attention and support. Both the 18-school consortium of the Institute for Development of Educational Activities and the "Redesign" program sponsored by the State Education Department in New York commend themselves as experiments based upon the psycho-sociological principle of reform by the interaction of creative peers. Selected information about these two experiments is to be found in Appendix G.

(4) Centrality of the Teacher

The fourth major organizing principle that emerged from the interviews was the centrality of teacher growth in effecting significant improvements in schooling. Granted, in other words, the conditions of peer interaction suggested in (3), the most effective leverage on significant educational reform is now widely believed to be the teaching staff.

Again, a number of sub-themes appear:

-- improving pre-service training and teacher-selection processes;

-- adjusting teacher certification requirements in order to provide more flexibility in recruitment and in order to increase the use of performance criteria for professional advancement;

-- encouraging and facilitating in-school schedule flexibilities to permit a greater amount of self-improvement time for teachers during the working day or working week;

-- fostering "teacher-run" schools;

-- creating teachers' centers and other teacher-directed programs for in-service teacher education.

This last needs a brief elaboration. Substantial interest is now being manifested in Washington and around the nation in "Teachers' Centers". Most of the models call for domination of such centers either by state or local education agencies or by local "parity" boards representing colleges of education, school administrators, parents, and lay leaders -- as well as teachers. All this ignores or underplays the reality described by Kenneth Kenniston in our interview with him. "Teachers are really in a bind. They are upwardly mobile, middle-class people under many pressures from many sides. They are always being handed new curricula and being told to implement them without question. As a result of all this, professional pride has been impaired."

The British model of "teachers' centers" has taken the teachers' "nigger syndrome" into account, and has structured teachers' centers in such a way as to give teachers themselves the overwhelming responsibility for constructing and implementing meaningful in-service improvement activities.

It is, of course, possible that a wide variety of teacher-improvement models can work if the spirit is right, if school leadership is right, if community attitudes are right. The essential point is that the introduction of educational innovations -- whether new technologies, new curricula, or new physical and class arrangements -- cannot take root, cannot become truly viable, without the full understanding and cooperation of the teachers themselves. It seems psychologically sound to hold that the more the teachers define their own needs on their own terms and turf, the greater is the chance for them to internalize educational innovations pioneered by others. This places a premium upon the teachers' own capacity to relate to others in the total educational system. But the initiative of educational reforms should come increasingly from the teachers themselves.

These then are some of the "organizing principles" that, according to our respondents, should receive particular attention from the Experimental Schools staff in making subsequent grants.

Some Principles and Goals of "Grantsmanship"

This brings this report to a final and somewhat gratuitous section. Are there "principles of process" in making grants that should inform the work of the Experimental Schools Program as it looks ahead? And are there articulations of educational goals that have more immediate operational consequence than some of the tried, if noble, rhetoric of the past?

(1) Big Money and Small Grants

On "principles of process" in making grants, only a few of those interviewed had anything to say. Respondents who had had long experience in philanthropy warned against "big" money: "big" money in terms of "normal levels" of local budgets; "big" money in terms of the past managerial experience of grantees; "big" money in terms of temporary distortions of the traditional "magnetic field" of relationships -- distortions ultimately leading to a reversion to tradition when the "electricity" of "big" money is turned off; "big" money in terms of creating new and temporary bureaucracies that stifle rather than facilitate innovation.

A number of advisors advocated the allocation of "marginal" small grants to a number of school systems that give evidence of past innovation or of responsible enthusiasms for the future. What "marginal" or "small" means in this context was not made clear beyond the general admonition to give enough to "support meaningfully" but not enough to "overwhelm".

But these are impressionistic cautions.

(2) Host Readiness

Virtually all respondents agreed that regardless of the size of grants, petitioning schools or school systems must be able to demonstrate their awareness of the subtleties of "host readiness" as outlined in Section VI. This has suggested to us that ideally at least one Experimental Schools site-visitor should actually live in a "candidate district" for a period of at least three to four weeks in order to develop a sophisticated knowledge of leadership realities and community attitudes. Less time might be spent in scanning a district with proven success in past innovations and with a proven continuity of leadership. But systems that wish to break out of traditional molds should be thoroughly canvassed in order to assess whether their enthusiasms are based upon a sophisticated analysis of realities and possibilities.

If a three-week site-visit is deemed administratively impossible by USOE, surrogates for this otherwise desirable arrangement should be pursued. A few possibilities suggest themselves:

(1) A local or nearby person with characteristics of objectivity and wisdom (perhaps an emeritus professor or a "League of Women Voters-type" housewife) might be hired to develop an in-depth analysis of "host conditions" over an extended period.

(2) In shorter site-visits, USOE-appointed experts might pick up or xerox relevant source materials that can be studied at greater leisure away from the site. Such materials might well include:

(a) press coverage of educational happenings over a five-year period;

(b) minutes of school board meetings over a similar period;

(c) principals' and superintendents' annual reports;

(d) PTA and teacher association newsletters;

(e) minutes of local and regional professional society meetings;

(f) State Education Department research and reports on the local district;

(g) biographical information about leading educators and lay educational leaders in the area.

(3) The proposers of the project might be required to submit an extended and well-documented essay covering some of the "host readiness" issues of concern to the Experimental Schools Program.

Finally, of course, some combination of a number of these approaches might be tried.

(3) Evaluation

A final note on process. Increasingly, legal and/or administrative requirements insist that proposals for grants should contain built-in programs of evaluation. A normative model for modern evaluation exercises in public-sector agencies has been outlined with considerable clarity and succinctness by C. William Kontos, Director, Program Evaluation, Agency for International Development (AID).[46]

He writes that the evaluation process should provide

> A logical framework in which [the reporting unit] (1) clarifies the project design by defining inputs, outputs, project purpose, and sector or program goal, and (2) establishes indicators for measurement or objective verification of progress toward the defined outputs, purposes and goals. Evaluation then consists of determining whether or not the project outputs were produced, whether such production in fact achieved the project purpose, and finally whether this achievement made a significant contribution to the higher sector or program goal. By focusing on the causative linkages between steps in the framework, evaluation avoids extraneous questions and looks for possible improvements.

Kontos goes on to say, "The logical framework permits a clear separation between manageable interests and those factors which appear to be beyond managerial control."

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[46] Letter to the Editor, Public Administration Review, July/August 1971, pp. 488-489.

Achieving this kind of evaluation within the AID framework calls for: (a) a group review (by significant actors) of goals and progress; (b) a process manager -- i.e., someone designated to serve (usually part-time) as evaluation officer whose responsibility is "to help project personnel analyze their projects in accordance with the logical framework and to organize and preside over group reviews." (The process manager operates within guidelines and worksheets provided by headquarters); and (c) a simplified Project Appraisal Report -- showing headquarters that rigorous evaluation has occurred.

Alas, anyone who has followed the development of evaluation and accountability techniques for education over the past several years, knows how maddeningly difficult it is to really prove anything about real changes in educational performance. How, in the process of weighing proposals, can a government agency interested in supporting innovative educational designs and practices evaluate the worth of evaluation rhetoric? Past experience has surely illuminated the recurring dilemmas: the political dilemma -- i.e., evaluation for whom; the metric-rhetoric dilemma -- i.e., not only are numbers tricky and words fuzzy, but the former are inevitably translated into the latter for policy purposes; the "locus of responsibility" dilemma -- i.e., assuming change can be proven, who or what is responsible for it; and the "mechanics-of-monitoring" dilemma -- i.e., systematic measures backed by sanctions may have untoward consequences for the creativity and integrity of the experimental system itself (e.g., the Texarkana syndrome of "teaching to the test"; the strait jacket of linear measures in terms of serendipitous departures from original formulations of goals).

Experimental Schools must somehow live on the horns of these dilemmas. The trick is probably not to become sucked into overly-elaborated evaluation systems (which in fact may have been drawn up by a friendly consultant to the local educational agency). At the very least, and on occasion at the very most, Experimental Schools should insist upon sympathetic and careful rapportage -- in capturing and recording evolving experience and practice under the grant. Beyond such reportorial monitoring, each applying district or system should indicate its own capacity for designing self-evaluation techniques that it believes to be relevant to its own program. Finally, whenever an experimental program includes work in improving basic skills, and where national tests in these areas have been validated, independent, outside evaluation of performance-claims should be insisted upon.

The elaborate and expensive three-level evaluation system which Experimental Schools has created is a good indication that it is sensitive to many of these points. As the precise nature of evaluation at each level remains to be worked out, we can do no more, at this point, than offer these rather general thoughts. They are vague rules-of-thumb, but they distill the wisdom, and are distillations of the frustrations that have emerged from some exposure to evaluation and accountability efforts in education over several years.

(4) Goals

Finally, are there ways of stating desirable pupil-oriented educational goals for the last quarter of the 20th Century that go beyond the pieties of the past?

It may be useful to state these goals in the form of a number of questions addressed to K - 12 school systems:

First, are they providing by grade 12 a sufficient mastery of basic language tools of words and numbers, and related analytic skills, to permit high school graduates to secure and hold decent jobs in an increasingly complex and rapidly changing economy and to cope with the elemental responsibilities of day-to-day living: parenthood, personal and environmental health, and citizenship?

Until our schools can guarantee this minimum for everyone able to learn, they will be a long way from guaranteeing very much grander visions for more than a fraction of our total population. Competency in words and numbers is not a sufficient goal for education, but it certainly is a necessary one.

Second, are the school systems providing (through cooperation with business, industry, government, and labor) alternative settings and devices for accomplishing goal number one for those who are turned off by our formal school arrangements, and who now restlessly cop out or drop out? For too many of our young people, the institutional school is a psychic prison traumatically associated with a sense of personal failure. Surely this society is inventive enough to discover ways of achieving high school equivalency through work-study programs (beginning say at age 14) and organized with the full cooperation of unions and industrial and commercial management. If compulsory-attendance, insurance, and child-labor laws need to be modified to achieve desired results, educational leaders must appeal to our political and economic leaders for understanding and for legislative redress.

Third, and closely related to number two, are the school systems really opening the eyes and abilities of young people to the diverse world of career options ahead of them? There is a fearful class bias in most of our school programs. By and large they feature curricula for first-class citizens only -- those who plan to go on to a four-year college, preferably Ivy League. Second class citizens -- those who plan to go to a two-year college; and third class citizens -- those who will not go on to college at all but will work in the trades or in unskilled or semi-skilled industrial, service, and agricultural jobs, are too often treated with disdain or neglect. For a nation of frontiersmen nurtured on the bottle of human equality, how did America ever become so twisted in her educational values?

By paying scant attention to the dignity and variety of work opportunities in our culture, our schools short-change those whose lives will find occupational meaning in non-academic and non-professional pursuits.

They also reinforce false and loathsome class and racial distinctions that this nation prides itself in its declaration to the flag on having overcome.

Walter Lippmann's words in his book, Men of Destiny, are apt:

> There is no world sense in [the feeling of ultimate equality and fellowship with all other creatures], for it is reasoned from the heart: 'there you are, sir, and there is your neighbor. You are better born than he, you are richer, you are stronger, you are handsomer, nay you are better, wiser, kinder, more likeable; you have given more to your fellow man and taken less than he, and yet -- absurd as it sounds -- these differences do not matter, for the last part of him is untouchable and incomparable and unique and universal.' Either you feel this or you do not; when you do not feel it, the superiorities that the world acknowledges seem like mountainous waves at sea; when you do feel it, they are slight and impermanent ripples upon a vast ocean.... Men were possessed by this feeling long before they had imagined the possibility of democratic government. They spoke of it in many ways, but the essential quality of feeling is the same from Buddha to St. Francis to Whitman.

This is the root ethic of our heritage. Whenever our schools magnify the differences in the values of occupations by which so many men and women identify their role and meaning in life, the educational system does violence to our most precious moral sensibilities.

Commissioner Sidney Marland has rightfully dubbed the so-called "general education" track which prepares neither for college nor for a marketable skill, an educational abomination.

Question four is whether the formal educational system in cooperation with the wider community is opening students' minds and abilities to the variety of delights that hang on the world's trees -- some like ripe apples, some like rich dates that must be climbed for. This must, of course, assume that students become conscious of the consequences of eating fruit that is poisonous. But fortunately most delights are not -- granted moderation. There is a depressing absence in so many areas of school-community collaboration of opportunities for young people (as well as adults) to indulge in creative and appreciative experiences in the performing arts, in literature, in handicrafts, in social and civic services, in naturalistic pursuits, and in life-time sports. As work weeks become shorter, can our society do no better educationally and culturally than to say to students and adults: "If you get bored with life, you can always watch pro-football on TV, drive to the stock-car races, or get drunk"? America forgets that our word for school comes from the Greek word for leisure.

The fifth and final question has to do with subtle matters of school governance and style. Are schools run in such a way that they set a meaningful and salutary behavioral example for the young people they are designed to nurture? Are teachers and students and parents treated with fairness and consideration? Are those who must conform to regulations meaningfully involved in their determination, or does rule-making tend to be authoritarian and arbitrary?

Surely part of the cynicism and rebellion of our age is due to the too frequent failure of parents and educators to conduct themselves as they ask students to conduct themselves. Many would accept with equanimity the abolition of every course presently offered in the so-called Social Studies, if they could induce the assistant principal, following his convocation lecture on "Personal Health and Environmental Beauty", not to drop his cigarette butt on the cement sidewalk outside the auditorium stage door; or, if they could induce the Civics teacher, in the middle of her lecture on Constitutional Due Process, not to throw a kid out of class without a hearing because his book suddenly dropped on the floor.

Young people need rules, but they also need the same sense of being valued and considered as individuals in the process of rules being developed and enforced as adults do.

In sum, grandiose rhetoric like "meeting the needs of the whole child" or "helping each child to become all that he is capable of becoming", tends to be inutile operationally. If we formulate goals in terms of such mundane questions as whether a student is in fact being taught to read and write, to appreciate a variety of career roles and opportunities, to value the work and the personalities of others who are different, to discriminate between kicks and true joyousness in the pursuit of happiness, and to find models for his own future life-style in the behaviors as well as the rhetoric of the school he attends, a new chapter in American education might well be written.

APPENDIX A

SUGGESTIONS CONCERNING A POLICY FOR SUPPORT OF EXPERIMENTAL SCHOOLS*

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1. In General

There is a way of thinking more or less taken for granted in the SURC proposal which I would like to examine critically. In elucidating it I rely on what the proposal says and, in part, on the privilege of a critic to claim that he reads a level or two beneath the written lines.

The underlying assumption is that of a one-way flow, in matters innovative, from a domain called research into that of practice. The problem of policy is thereby taken to be that of selective encouragement -- judging what research is ready for application, its potential importance if brought into the sphere of educational practice, and the readiness of schools and communities to embrace and support the innovations offered.

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This way of thinking grows naturally out of the history of the scientific revolution as the latter has affected industry, agriculture, medicine, or weaponeering. I shall call it the design mode. New knowledge -- springing from research -- suggests innovation; programmatic research of a more detailed kind leads into engineering; engineering leads to pilot operation; and finally pilot operation expands toward full scale production. So it has been with molecular structure, electromagnetic induction, plant genetics, cavity resonance, nuclear fission, information theory.

These stages are of variable importance depending on subject-matter, state of knowledge and of art. If one emphasizes this variability across many concrete examples the design mode becomes almost indefensible. Thus if "practical innovations clinically tested" (p. 1) can be an example of research (which of course it can), then the sense of partitions is lost and so is the meaning of one-way flow. The examples of Hilgard (p. 2), the speed-up lane and pre-stressed concrete, have the same point. In World War II the wild success of operational research started with a similarly common sense idea for increasing the proportion of military aircraft airborne at any one time. It happened to be a young mathematician who had the idea, but it might equally have been a poet.

The design mode often carries much stronger implications with it, institutional implications. Naturally research is done by researchers, "scientists", people qualified or certified for the part by special marks of competence. Their activities are "R and I activities" which move along a scale from "basic postulation and preliminary investigation" to "drawing board engineering". There should be a typology of "research readiness" available for screening such research, but it ought not to exclude or minimize the potential importance of less certified innovative hunches -- such as are suggested in the Hilgard quotation.

As I read this it is a suggestion that one should soften the rigors of the design mode and be flexible about the primate dominance order which is characteristically implicit in it. And I strongly agree. But I would like to urge a further step. This requires a little more analysis.

In its normal unsoftened form the design mode rests upon certain conditioning assumptions which have to hold good before it is effective: (a) it presupposes an effective definition of goals -- more or less detailed, "operational" or "behavioral"; (b) it presupposes the availability of materials which are uniform with respect to relevant properties; and (c) it presupposes adequate rules for assembling or organizing these materials in a replicable way.

In a little known posthumous essay[1] the engineer-novelist Hans Otto Storm took a cool Veblenian look at the design mode and found our civilization guilty of overdoing it. By way of contrast he defined a complementary mode which he called "Eolithism" -- a mode in which heterogeneous materials, in the process of being enjoyed for their very diversity, suggest ends toward which they (only in consequence) become means; and in which the absence of design formulae are compensated for by generosity, redundancy, trial and error.

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[1] "Eolithism and Design", by Hans Otto Storm, Colorado Quarterly, Vol. 1, No. 3, (Winter 1953) pp. 281-291. Reprinted in Outlook, No. 4 (Winter 1971) Mountain View Center, 1511 University Avenue, University of Colorado, Boulder, Colorado.

When we go beyond Storm's essayistic purposes we find, I think, that all interesting histories, technological and institutional, are of mixed modality. If we look to the kind of work to be done when the design conditions are not satisfied, we find that much of it is highly Eolithic. Fundamental research is one example -- finding and filling gaps in the web of knowledge that you couldn't even define beforehand. In the aftermath of World War II successes in programmatic research a well-known official was rumored to have said "But think how much faster nuclear fission would have been discovered if we'd only had a project for it!"

Another example is the setting of goals. There are designable conditions which make it easier or harder to set goals which have some finality and will be found worthy in retrospect, but the design mode is inappropriate to the process itself. The meta-goal of reaching agreement about worthy goals is not a "behavioral objective". In educational innovation conceived in the design mode we have, for this reason, treated goal-setting as an inscrutable and private affair, contenting ourselves with the "objective" part, the critique of means. In practice this loads things heavily in favor of conventional goals.

Even in territory sacred to the design mentality we see, over time, the interaction of both styles. The internal combustion engine was not designed, it was rather re-designed thousands of times as new uses, new materials and new research came along in its wake. The larger picture is not one of design but of cultural variation and selection, of evolution. Design is one aspect of selection.

But the research component is crucial. It can mediate changes, gains, which are big and which would hardly take place spontaneously. Medicine looks very complex indeed, but we would probably all agree that in many areas research and consequent innovation has in recent times a far finer record than the pooled practical wisdom of many generations of devoted practitioners.

Education is more complex than medicine, and research relevant to it is in many ways more primitive. Physiological diversity is no match for the developmental diversity of persons, and "educated" is more problematic than "healthy". An imperfect parallel would put medicine back into the 19th Century, when it was more often the rare practitioner with scientific skill than the laboratory researcher who made significant innovation (Semmelweiss, Oliver Wendell Holmes) and set the stage for research -- in their case long neglected.

When we look backward we do see certain crucial research threads which had no contemporary payoff in medicine, or which even stimulated premature practices which didn't work. Harvey's great 18th Century discovery provoked medical hypotheses of disease as all due to "poor circulation". The conservation of energy grew out of

Meyer's work on animal heat but had no immediate medical payoff.

So probably the most fundamental research relevant to education has to go at least as circuitously. Piaget's great work on intellectual development is in the right league, and his questions match those of the best teachers. But for direct "application" it is not ready except as it encourages teachers to sharpen their diagnostic and critical skills. When it is used as a guide for engineering design it leads to mechanical foolishness ("teaching the stages").

2. Specifically

But let me leave parallels aside. In the proposal two criteria are suggested for research-readiness which I believe illustrate my point. These are only used as possible examples, and I also only use them in that spirit. The first is "whether the research is pregnant with sought-after payoffs (e.g., improving the reading performance of the disadvantaged)." Now it is not only possible but very likely that, as conceived and as sought after, a contribution to reading performance will be in practice a bad criterion.

Let me say why. We may suppose (what I believe in fact is true) that "reading performance", narrowly conceived as decoding skill, is what the disadvantaged will characteristically fail at; their advantages lie in other directions. A refinement of detailed research within this framework will only produce refinements of failure. But that is bad research on other grounds. Let us suppose that good research discovers (what some practitioners already know) that reading performance of the disadvantaged *does* improve, when suitably redefined to mean a habit of engagement in two-way commerce in the written word, -- provided good books, etc. are only one element in a considerably richer non-book educational matrix (this is a truism about books which education has often forgotten). And even then the reading payoff must be understood as a derivative and necessarily unpressured one.

One of the most important consequences of good research in such areas may be to lay the foundations for persuasion[2] that payoffs *ought* to be redefined because *as* defined they are unobtainable or unworthy. Such ends need broadening.

The second criterion suggested suffers similarly, I believe. Costs and operational simplicity will be the death of us if we don't start looking to the definition of X in "cost per quality unit X". And simplicity is relative to the way an institution is geared -- so its measure under existing habits and conditions may be just what needs redefinition.

The suggested review of proposals gives rise to a major policy consideration. Education -- like medicine in the 19th Century -- does not enjoy a widespread consensus with respect to fundamentals. Thus in the same period of time we have had to contend with a diversity of "models" which span a wide range of means *and* of implicit goals. On one side we have active teacher-passive child[3] conceptions of the process which refine upon the conventional school patterns by explicit introduction of operant or classical conditioning practices and descriptions -- token reinforcement, behavior-modification, Bereiter-Engelman, etc. On the other side we have the free-school "model" which invests a passive teacher-active child conception of the process with ultimate virtue. Off in another direction we have passive teacher-passive child innovations which are heavily pre-programmed through tele-tape, film, text or computer -- often designed to "individualize" instruction by decoupling from teacher -- "teacher proofing" -- and re-coupling to program. In the opposite direction we have the "British Infant School model," emphasizing an active teacher-active child milieu, rich with non-verbal materials. Conceptions of "teaching" and "learning" across this diversity have very little communality. Conceptions of "evaluation" differ as widely as anything else, as do those of accountability.

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[2] Hans G. Furth, *Piaget for Teachers* (New York, 1970).

Under these circumstances the Design Mode is in a series of troubles. However one may struggle against such an outcome, it is hard to avoid "safe" policy which is neutral toward all claimants, allowing them to define their objectives, their research input, and their organization of means, exercising only formal criteria of adequacy, completeness, etc., not substantive educational ones. Under these circumstances also it is difficult to avoid a partisanship inherent in the Design Mode for crisply defined limited objectives in limited time with predefined tests of achievement -- "ten I.Q. points in a year" or "reading at grade level in nine months". But if we allow that education *is* a more complex matter, then such operational definitions only avoid the deeper issues, postpone the need to face them, and narrow the conceptual framework to one within which they cannot even be formulated.

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[3] This grouping is a very useful one developed in Analysis of an Approach to Open Education, by Anne M. Bussis and Edward Chittenden (Educational Testing Service, August 1970).

So let me argue against the acceptance of the Design Mode and propose instead a virtual reversal of the research → innovation flow which it presupposes. It would be a wise policy to encourage steady grass-roots innovation, with external antecedent research considered not as a source of innovation but only -- more modestly -- a *possible* resource for it. It would be generally conceded that educational research has *not* led to any widely relevant important generalizations about learning and teaching about school organization.[4] Under these circumstances our best hope, both for better education and for more significant research, is to try to find practitioners who are -- by relatively neutral common sense tests -- very good practitioners, accustomed to success.[5] We start there and, with certain criteria of our own, seek to support, amplify, learn from and in due time make visible the fruits of their development. The pattern is one in which a school principal is perceived as an educational leader (a principal teacher, not a principal administrator), and teachers who are carefully chosen (and who volunteer!) are perceived as capable of professional growth -- with help -- to higher levels of success which can be recognized in a variety of ways -- self-description, consensus of observer, formal tests, etc.

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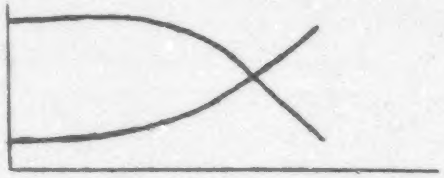
[4] Gene V. Glass, "The Wisdom of Scientific Inquiry on Education", *Journal of Research in Science Teaching*, in press.

[5] Cf. David Hawkins, "Learning the Unteachable", in *Learning by Discovery*, Lee Shulman, Evan Keisler, eds. (New York, 1966).

The time-scale for such achievement is not likely to be short, and policy must not push it into premature display. But there are a number of ways in which policy and financial support can assist and accelerate.

Several years ago some of us were involved in one of those pre-legislation conferences intended in that case to produce position papers on the education of the disadvantaged. Some of us urged -- unavailingly as it turned out -- that it would be necessary to find, by systematic search, those already skilled in the art of good pre-school education, involve them in the beginnings of a new program, and restrict the scale of a first-year effort to the work of such a group, however small. But one could then build in a kind of support which they would welcome and are typically unable to afford: money for well-qualified apprentice teachers, for locally available seminars in child development and in subject-matter, for professional time devoted to such work and study. At the time an informal small-sample survey indicated that -- appallingly -- the numbers of first-rate directors would come out in the hundreds for the whole country. We argued that the principal component of growth-potential was visible high quality maintained (with strong efforts) through growth, and tried to expound upon the virtues of the exponential curve. In seven years, we urged (for the sake of concreteness), the curve of accomplishment could cross that of a program which started very large and had therefore to inherit the consequences of its initial mediocrity:



In that context we were facing the issue for the first time and were in a sense naive politically. We might have proposed, with a greater chance of success, that this small-beginning, high-growth-rate proposal be initiated along with the politically more fashionable one. I mention this in the present context because it suggests that a government program's relative poverty, with limited funds shrewdly directed, might be a nearly optimal initial condition.

The first aim of such a policy for experimental schools would be to consolidate, reinforce and give morale to good practitioners who come forward with the promise of beginning from a plateau of well-established competence, and who are able to spell out reasonable plans for supporting innovative professional growth in their teachers. There are a number of general criteria here. School staff must be carefully chosen and must also be volunteers who understand the proposed program and are eager to be part of it; provision for their professional growth must be major and worthy, they must have some self-conscious advisory support by persons sufficiently detached from administrative and operational chores to watch over their progress and record it. They must have provision for intelligent parent-community relations, and they must be assured relative stability of local school-political support. Such conditions will not be easy to assess, and they imply in the funding agency a staff capable of making substantive professional judgments about all such matters.

The second aim of such a policy would be -- and here the reversal of flow is crucial -- to introduce an element of research into such an operation, in a way which was definitely and in principle non-directive in relation to the operational-innovative side. Many "experimental" schools have been run as adjuncts to research programs, and over time the prognosis is not good. There is a subtle-obvious dissonance between the ambitions of research-oriented academics and those of good teacher-craftsmen whose aim is to shape well an ongoing institution, not publish papers. The prevailing primate dominance-order must be reversed, and the first aim of research here should be a descriptive naturalistic one, not a prescriptive one -- the experiment is really an experiment in self-conscious evolution, not a Design. Such research should not be separated from the advisory function, but should be afforded as adjunct to that function. The investigators should not be naive in the craft of teaching -- they should "peep and botanize", they should be narrators and analysts and theory-minded persons -- young Darwins, not young statisticians.

I will finally suggest a number of specific criteria.

It is important to see that a school capable of self-conscious evolution has some built-in features which will promote that evolution.

Here is a crucial place for the Design Mode to enter.

(1) Some initial conditions (staffing patterns, means of choosing staff, provision for advisory personnel, agreed relations with the school system, etc.) are much easier to stipulate in advance than to evolve afterward.

(2) The old-fashioned meaning of curriculum as a general statement of subject-matter aims and a general plan of work is one which does not exclude operational decision-making by diverse teachers in diverse ways. A more recent tendency has been to assimilate what used to be called syllabus and time-table into the curricular "package", with the unfortunate effect that teachers are treated -- and often see themselves -- as mere administrators of someone else's planning. An experimental school should avoid such rigidities, and this means that teachers' subject-matter approach and their day-to-day planning must be clearly in their professional hands -- along with the means of obtaining advice and support when they need it, from each other and from other sources provided -- sources which are planned in advance. If teachers are to be successful innovators this kind of support is absolutely vital. It is often considered a luxury. And their link with research responsibility is often considered a luxury among luxuries.

Certain curricular components represent necessary goals -- for example the three R's. How an experimental school regards these and plans for them is likely to be crucial. In our present school world the mistake is often made of regarding these goals as not only necessary, but sufficient. A minority -- often in the "free school" movement -- reacts by regarding them as not only insufficient, but unnecessary. (A. S. Neill). In the former tradition, reading and writing are treated as narrow mechanical skills divorced from the rest of the curriculum (primers for the early years, "readers" for the later -- "paragraph building", "spelling", etc. are all isolated for exercise). In the latter reaction they are similarly conceived, and therefore reacted against as impediments to "expression". So any experimental school should show in its plans some comprehension beyond these simplistic alternatives and some general plans regarding the rich provisioning of appropriate books, etc. over wide ranges of subject-matter -- story, history, fantasy, science -- linked to practical, scientific and artistic pursuits.

Matching this diversity, an experimental school should show awareness in its plans for avoiding the paper-dominated sterility of traditional classrooms -- with plans for some plenitude of raw, semi-finished and structured materials and for utilizing the educational potential of its immediate human and natural environment, urban or rural. This does not mean that there is or should be a pre-designed program for the detailed use of such materials and resources. (In this connection it would be a small but powerful gesture of trust if teachers were given petty-cash allotments for immediate on-the-spot purchases.)

Then there is the third R, mathematics, which of all the key necessities we handle worst. Advisory help in this area is crucial, simply because most teachers -- even most good teachers -- have themselves suffered extreme mathematical frustration and foreshortening. Recent "curricula" have altered the content (potentially perhaps somewhat for the better), but like those for reading and writing, have concentrated on a narrow formal mode of instruction unrelated to children's actual or potential interest in form and number present in the natural world and in the social order, to their own dawning intellectual capacities.

In all three connections — reading, writing, and mathematics — there is highly relevant research which supports emphasis on the need to weave them into the mode represented by children's capacity for intelligent practical involvement with concrete subject-matter often of considerable complexity. This research is, among others,[6] that of Piaget, which shows clearly that the formal symbolic mode which dominates our present system is the last to develop and the least appropriate vehicle for education in the early years. There is indeed a question whether it is ever in isolation an appropriate mode, even for adults. Perhaps the optimal use of formal didactic teaching occurs when it is one phase interwoven with others. This is not to belittle the importance of genuine informal two-way communication in the context of children's engrossing pursuits. Where the implications of Piaget's work are most important is in underlining the inefficacy of formal one-way discourse as a dominant means of instruction, which it almost universally is.

I shall not try to speak about the rest of the curriculum and school organization -- but perhaps the spirit of what I would hope to see evolving in our schools is conveyed by a recent observation of the biologist Rene Dubos, who said that children seem to learn and develop well who grow up in a rich environment in which they are able, along with adults, to function well. About this process there are many unknowns. I for one do not see how we will come to know them better except by starting with, supporting and studying the performance of our most experienced and skillful practitioners. There is a danger, not a logical vicious circle. There is a similar Gordian knot wherever we choose to start. For reasons I have urged this appears to be the best one for policy to cut.

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[6] Cf. Hans Furth, *op. cit.*

APPENDIX B

ON CHANGING EDUCATIONAL PRACTICE*

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We believe that our most distinctive contribution to an understanding of the roles of research, development, and innovation in influencing general practice in the field of education is to raise some questions about the fashion in which problems in this arena are usually formulated. It is assumed ordinarily that R & D activities in education, as well as _ad hoc_ innovations, have significant and widespread implications. Good ideas and practices should somehow translate to situations outside the localities where the development and innovation have occurred. The scholar in the field of education usually searches for the generalizable in educational development and innovation.

The form of the task, thus put, tends to emphasize a scientific/industrial/engineering conception of change. It leads one to examine strategies for identifying key problems in the replication of an idea or innovation and is intended, in the hands of imaginative policy advisors, to lead to the types of rational and inventive analyses suggested by an approach in which potential benefits are assessed, significance determined, and field readiness estimated.

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We are confident that the task as outlined in the SURC Policy Institute proposal will be addressed astutely by the impressive group of scholars engaged in the present study undertaken for the Experimental Schools Program. Our intention is to open another window on the problem, and in so doing suggest some possible shortcomings of the linear view of educational change that seems to us to undergird the SURC Policy Institute study in progress.

In the United States we must strive to be a bit clearer both about the locus of responsibility for change and the level at which change that affects students actually takes place. With respect to the question of responsibility, we are not necessarily on safe grounds to assume that the constitutional issues related to local and federal prerogatives will remain submerged when we talk about modifying the quality of education. While both of us are convinced that there is a potentially useful federal role in educational innovation (and we look with warm support on the establishment of a National Institute of Education to foster educational change), the strategies for altering our educational practices had best recognize some of the intergovernmental issues involved.

With respect to the practical issue of educational changes that affect youngsters, it is our view that "development" in education takes place most effectively at the level where education occurs. With our present institutional arrangements for educating young people in the United States, this level is usually the classroom. We assert that experimental schools in the next town, or research results from a laboratory, or a curriculum development project in a regional center have little influence in changing classroom practice, other than to alert the informed teacher that there is a new program or new organizational arrangement in existence.

Independent teachers, both the competent ones as well as the incompetent, resent seeing themselves at the end of a development/innovation line in which they are expected to implement the bright ideas of someone else. This independent stance on the part of the practitioner who works directly with children is strengthened these days by accelerated steps toward teacher organization and collective action. In all likelihood curriculum questions will come even more to the fore as the organized teaching profession negotiates with school boards.

Educational innovation is seen by us as differing sharply from innovations and development in agriculture, or pharmacy, or any other field where the scientific basis for practice is assumed to be primary. There is an inescapable personal element and sense of independence on the part of the teacher who closes his classroom door and is subjected but minimally to demands to change the basis for his practice.

All of the considerations listed so far are compounded and confounded by American ambivalence about the primacy in our social institutions of pluralistic values reflecting differing concepts of the nature of man. To the extent that pluralism is accepted as desirable in the United States and applicable to an educational institution, then the level at which we are to demonstrate varying approaches to schooling becomes crucial. Is it sufficient at the federal level, for example, to fund in an experimental schools program, say, fifty visions of desirable progress? Or is there some fundamental sense in which hundreds of thousands of differences must be recognized in fact and federal policy promulgated accordingly?

We believe that, in general, the more generalizable or transplantable a concept in the field of education, the more trivial it is likely to be. Reductionism has usually served the sciences well in comprehending various phenomena, but we are not heartened by the types of rational and science-based approaches that have been utilized so far in our attempts to understand and improve education. We have come increasingly to view teaching as a highly personal statement, and learning as a highly personalized endeavor.

Here we might make a distinction between "personalized" and "individualized", since educational engineers for the past decade have tended to emphasize and cherish "individualization". On closer examination of programs like IPI, the individualization turns out to be highly prespecified. A sophisticated technologist recognizes that some of the elements are indeed different in learning and tastes, and provision is made for the variation. Nevertheless, the aim is to identify these differences in advance and make explicit plans to accommodate them -- all for the purpose of achieving well-understood and accepted goals.

The responsibility for goal setting in education, we believe, is quite diffuse in actuality. Change strategies that are discussed most in education often tend to mask sharp and controversial issues about purposes, for the sake of agreement on a severely limited number of specific goals.

Havelock[1] outlined two "models" of innovation. The first -- research, development, and diffusion -- reflects the engineering model in which general solutions are sought for well-understood, if not universal, problems and the results disseminated for as widespread adoption as applicable. Havelock contends that this model is over-rational, over-idealized, excessively research-oriented, and inadequately user-oriented. Evidence that programs developed in such a scheme are strongly modified in local situations is often taken to reflect weakness in the strategy for change. In this model the professional practitioner is essentially a passive client.

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[1] Ronald G. Havelock, Planning for Innovation through Dissemination and Utilization of Knowledge (Center for Research on Utilization of Scientific Knowledge, Institute for Social Research, University of Michigan, Ann Arbor. Second Printing, January, 1971).

Havelock discusses an alternative model which he calls the "problem solver" approach. In this case, user need is the basis for identifying problems. The role of the outsider is primarily collaborative and consultative. In such a model, the development of highly generalizable, transplantable products is eschewed; attention is focused on the unique features of the particular situation for which the program is being developed. The model is relatively inattentive to those features the situation may share in common with others.

It is obvious that we lean toward the second "model" described by Havelock, though we have some reservations about the centrality of "problems". The term "problem" to us suggests a fairly well-defined difficulty. While such difficulties do arise in practice, our view of the ebb and flow of ideas and energy in the style of a teacher suggests that there is usually a general impetus toward some change, improvement, and modification in existing practice — without necessarily a focus on a solution to some well-recognized difficulty. Most teachers progress through evolutionary stages as they modify their approaches to their work with children.

If basic educational change tends to be undramatic (and we contend that dramatic and highly visible change is usually superficial when one examines what is actually happening with teachers and learners), then considerable doubt is cast on an approach to educational innovation in which we highlight beacon-like efforts like federally-funded experimental schools. As a matter of fact it is a well known phenomenon that practitioners when considering innovation are adept at pointing out reasons why special situations are alien and have little application to their own practice.

We recognize also that there may be political demands when tremendous amounts of federal funds are used to change the schools. Bright and shiny innovations are needed to encourage legislators and others who provide financial resources. Often the bases for the initiatives are primarily political. But if these appealing innovations, established in a two or three year period, have little effect, and if indeed the innovations tend to disappear over time when the initiators of new activities exit from the local scene -- and the funders from the federal scene -- we must face the key question of whether public monies are being used wisely.

A study of educational innovation adopting a more evolutionary view of educational practice would be more concerned with the processes which lead to improvement of schooling. Case study approaches appeal to us as potentially productive; but an important element if the case studies are attempted is to focus on the most potentially productive modes of analysis. We favor focus on transactional elements as well as on outcomes. If case studies of "new math", IPI, or "language laboratories" -- as suggested as possibilities by the SURC Policy Institute -- are centered on the search for common elements, then we are not sanguine about the results. Again, while the quest for the generalizable will occasionally reveal a seminal principle, it can also mask the idiosyncratic and unique factors in success or failure.

In a spectrum from art to technology, we tend to view teaching as a craft. A craft has significant elements of the artistic as well as the technological. The search for common elements may conceal the most significant contributions to success in a field of complex practice like teaching.

It is perhaps useful here to emphasize some of the issues in management education as we understand them. There are certain business schools that emphasize theory (of organizations, personality, economics, etc.). Management specialists are trained in these schools to apply theoretical constructs to complex cases that arise in practice. An alternative view, demonstrated in other business schools, is to de-emphasize the theoretical in a search for the unique elements in an imaginative solution. We favor the latter approach in education, considering the current state of our understanding of schools, teachers, communities, and children.

Thus we see educational change as less systematic than we infer from the SURC Policy Institute proposal and probably in the broader experimental schools design. In our emphasis of political, social, personal, aesthetic, and economic factors we have so confounding a mix of relevant elements that the field is poorly suited for analyses based primarily on social scientific traditions.

We are attracted to highly localized, teacher-centered conceptualizations of educational change. Like so many others, we are heartened by the teacher center movement in Britain, though we recognize the severe problems in transplanting that concept to the United States. In any event, we see the central authorities fostering communication, stimulating diverse and locally-based innovative approaches, and providing consultative services. Here, again influenced by developments in the United Kingdom, we find the Schools Council meld of central curriculum building with recognition of highly-valued local prerogatives as potentially suggestive for the American scene. While we must find American solutions to American problems, the empirical (and non-experimental) approaches in Britain which are startlingly (to an American) atheoretic please us because of their focus on needed change in naturalistic settings.

It is no surprise that in a highly industrialized society like ours there is a tendency to use industrial models for any activity, even the implementation of social policy. It is necessary only to perceive educational services as "products" to begin examining production models when drawing plans for new programs in the schools. Mass production to highly detailed specifications with appropriate quality control is a goal at the factory. An increasing number of educational planners see the same aim for the school. Certain qualities are to be mass produced. Mass production requires sophisticated pre-specification. And quality control is necessary if educators are to be responsible.

The conventional models for curriculum design that are most compatible with this particular conceptualization of the educational change process are reflected strongly in the United States, particularly since the task-analytic psychologists have explicated various theories in applying them to school settings. And "accountability" pressures strengthen these tendencies. But in the production line model of education -- the linear view of change -- the emphasis is on the replicable and highly quantifiable, the readily describable and the unambiguous. We tend in our own examination of educational change to search for the unique and the subtle, the long-term and the tangential effect, the ambiguous and puzzling events -- all of which reveal the vitality and excitement of a new practice. While we understand and would like to encourage attempts to reduce education to entities we can manipulate using our available scientific tools, we believe strongly in a concomitant search for comprehension of educational change that relies on opportunities to capitalize on unplanned as well as planned diversity, poetic as well as scientific perspectives, artist-craftsmen as well as engineers.

As a matter of basic policy in the United States, steps must be taken to counteract the kind of social planning that assumes that a particularly wise and prestigious group is possessed of an adequate educational vision to warrant investment of our major available resources in an attempt to replicate that vision throughout the countryside. Constructive independence is precious and is cultivated with difficulty in the absence of long tradition that supports it. Unfortunately independence is lost more easily than it is attained. That is why the centralization trends so pronounced in the world today may be particularly saddening.

But that is all the more reason why policy advisors to a government in which the value of pluralism represents a high order priority, at least at a rhetorical level, should take special pains to preserve opportunities for considerable variation.

APPENDIX C

LIST OF PERSONAL INTERVIEWS

Name	Position	Date & Place of Interview	Inter-viewer
Ms. Marian Beecham	Principal Camillus Junior High School Camillus, New York	12/21/71 Syracuse, N.Y.	Teich
Dr. Peter Buttenwieser	Director Durham Child Development Center Philadelphia, Pa.	12/30/71 Philadelphia, Pa.	Teich
Mr. Edward Carpenter	Headmaster Harlem Preparatory School New York, N. Y.	12/27/71 Teaneck, N. J.	Teich
Mr. Philip Coombs	International Council for Educational Development Essex, Conn.	12/31/71 Essex, Conn.	Bailey
Dr. Lawrence Cremin	President Teacher's College Columbia University New York, N. Y.	1/6/72 Palo Alto, Calif.	Bailey
Dr. Lee Cronbach	Professor of Education Stanford University Palo Alto, Calif.	1/6/72 Palo Alto, Calif.	Bailey
Dr. Alvin Eurich	President Academy for Educational Development New York, N. Y.	12/29/71 New York, N. Y.	Teich
Mr. Joseph Featherstone	Freelance writer	1/18/72 Boston, Mass.	Bailey
Dr. John Goodlad	Dean College of Education UCLA Los Angeles, Calif.	1/6/72 Palo Alto, Calif.	Bailey

Mr. Harvey Haber	New Schools Exchange Santa Barbara, Calif.	1/7/72 Santa Barbara, Calif.	Teich
Dr. Ernest R. Hilgard	Professor Emeritus of Psychology and Education Stanford University Palo Alto, Calif.	1/6/72 Palo Alto, Calif.	Bailey
Mr. John Holt	Author; educational consultant	12/29/71 Cambridge, Mass.	Bailey
Dr. Robert Karplus	Director Science Curriculum Improvement Study University of California Berkeley, Calif.	1/6/72 Berkeley, Calif.	Teich
Dr. Kenneth Kenniston	Professor of Psychiatry Yale University New Haven, Conn.	12/28/71 New Haven, Conn.	Teich
Mr. Herbert Kohl	Author	1/6/72 Berkeley, Calif.	Teich
Ms. Katherine Marin	New Schools Exchange Santa Barbara, Calif.	1/7/72 Santa Barbara,Cal.	Teich
Ms. Marjorie Martus	Program Officer Division of Education and Research Ford Foundation, New York, N.Y.	12/22/71 New York, N. Y.	Bailey
Mr. Edward J. Meade Jr.	Officer in Charge Public Education Ford Foundation New York, N. Y.	12/22/71 New York, N. Y.	Bailey
Mr. Astor Mizuhara	Associate Director Experimental Schools Program Berkeley, Calif.	1/5/72 Berkeley, Calif.	Teich
Mr. Lloyd Morriset	President Markle Foundation New York, N. Y.	12/22/71 New York, N. Y.	Bailey

Mr. Howard Mosher	Consultant SURC Policy Institute Syracuse, N. Y.	12/17/71 Syracuse, N. Y.	Teich
Mr. Alan Pifer	President Carnegie Corporation New York, N. Y.	12/22/71 New York, N. Y.	Bailey
Mr. Roger Smith	Educational consultant	12/29/71 Cambridge, Mass.	Bailey
Dr. Patrick Suppes	Professor of Philosophy, Statistics & Education Stanford University Palo Alto, Calif.	1/6/72 Palo Alto, Calif.	Bailey
Dr. William Wayson	Chairman Department of Educational Development Ohio State University Columbus, Ohio	12/21/71 Syracuse, N. Y.	Teich
Mr. Larry Wells	Director Experimental Schools Program Berkeley, Calif.	1/5/72 Berkeley, Calif.	Teich

INTERVIEW EXCERPTS

The interviews in this study were done in a relatively informal manner, without use of a rigid questionnaire format. Their substance was not taped, but simply recorded in the form of written notes, which were later expanded and transcribed. From these transcripts we have selected and organized under several headings a variety of particularly "juicy" thoughts. While the paragraphs which follow are, to the best of our ability, faithful renditions of interviewees' expressed ideas, the reader must bear in mind that they are paraphrases and not direct quotations.

The Nature of Change

If you propose something new to teachers and get the majority of them to approve it immediately, there's only one conclusion you can make: you have come ten years too late. Really good innovative ideas will only pick up minority support at first. It will be necessary to persuade the rest. This requires leadership.

--Alvin Eurich

Subtle educational change, change which does not produce confrontation is a false goal. No real changes can result without baring the major divisions that exist within the present education establishment. Subtle changes will necessarily be so minor as to be meaningless.

--Herbert Kohl

Things are much messier today; however, it is a creative mess. I am unhappy with people who tend to use satisfaction as a criterion for evaluating the educational experience.

--Kenneth Kenniston

Real innovation should be radical; it should intellectualize a sharp change.

--Patrick Suppes

Individual Differences

The rigidities of the educational system ignore the myriad differences among individuals--students and teachers. Some students should be in school for six days and others should be in school for only two days a week. Teachers should have complete jurisdiction over the material in their classrooms and release from their many bookkeeping chores. The role for technology should be to do the things teachers no longer have to do--freeing them for far more flexible relationships to students and community.

--Edward Meade

Any innovative system will work, but only for some. The key issue around which all reform must be built is the differences among individuals.

--Edward Meade

Given the broad spectrum of traits embraced by the truism of "individual differences," "individualized instruction" necessarily implies many models, not one.

--Alan Pifer

Anything that individualizes education makes for an inefficient system, even though it can make for good education.

--Ernest Hilgard

Central to the utility of an innovation is the question: With what latitude can you define an innovation so that a range of people can thrive in it? Mechanical transplantations without this kind of adaption are hopeless.

--Robert Karplus

The importance of an innovation depends on one's objectives. Under the conditions of varying objectives, there can be little common ground upon which to evaluate the significance of innovations.

--Herbert Kohl

We are interested in the "what" and "why" of education--not the "how", necessarily. It's not hardware and technology that guide our activities, but our goals.

--Edward Carpenter

Self-Renewal

Truly "experimental schools" can be based on a wide variety of models. The one common characteristic among them is their capacity to engender environments and social structures where teachers can reach out and where "anything can happen."

--John Goodlad

American school systems are now practically filled up with innovations resulting from Title I and Title III money. These innovations have become so entrenched that they are in effect new orthodoxies. True innovation involves freedom to make further changes as circumstances develop.

--Patrick Suppes

Funding should be provided for schools to develop innovations not to test them.

--Patrick Suppes

Self-Evaluation

There must be devices and time within the school structure for the whole staff to become articulate and self-conscious about what it is doing and then to judge how well the work of individuals fits into the total picture.

—Consensus in discussion among Cremin, Cronbach, Goodlad, Hilgard and Suppes

Schools which can identify and define what new things they have done that constitute beneficial innovations deserve support.

--Ernest Hilgard

The major role of the innovative administrator is to create a climate where (1) it is legitimate for people to have problems, and (2) the teaching staff recognizes that if anyone is going to solve these problems, it is they, themselves. Once this is accomplished, teachers will look around to see what others with similar problems are doing, will make adaptations to suit their particular case, and will evaluate their accomplishments in light of their goals.

--William Wayson

Teachers

The key office in changing a school is not the curriculum office but the personnel office.

--Peter Buttenwieser

New devices, technologies, curricula, etc. can be used but only if they are congruent with a teacher's own development, selected and employed by the teachers themselves.

--Kenneth Kenniston

You can't expect teachers who teach for four days in the traditional kind of way, to be able to sit down and innovate on the fifth day. Teachers need enough free time to completely rethink their schools.

--John Goodlad

Teacher development means doing things within the school system and not going away for a year to get a Master's degree.

--Kenneth Kenniston

If an innovation results in a better use of people already in a system, then it has a better chance of success.

--Alvin Eurich

Students

Desks and chairs are an adult concept of the proper environment for learning. Discrete time periods and narrowness of subject matter are adult concepts of the learning process. Children have a desire, indeed a compulsion, to expand infinitely in the direction of their interest until blocked by fright. Work, play, and learning are one and the same thing for children.

--John Holt

If one looks at those things which happen to kids and affect their lives in their early years, formal education ranks about sixth in importance. Thus, if we want to change things through education, we have to deal with more than simply the formal schooling experience.

--Kenneth Kenniston

The whole essence of education gets down to getting people to care about the kids. A child, given health, nutrition, and an average family life, can learn just about anything he has a need to learn.

--Harvey Haber

High schools and colleges have created an enormous force for change in our society by providing the environment in which a totally unique "youth culture" has developed.

--Kenneth Kenniston

There is a need for mixing all ages and sexes of students, including appropriate adults.

--Harvey Haber

Dissemination of Change

Energy should be concentrated on the hotbed between the experimental school and the other potential receptors. You don't really have to worry about experimental schools; they're fairly easy to take care of. What isn't easy is to develop those conditions which assure receptivity to change in other schools.

--Peter Buttenwieser

Big Money

The strings attached to large sums of outside funding frequently compel and inevitably encourage the strengthening or development of those bureaucratic structures which tend to smother genuine innovation. . . Under the influence of big money too much emphasis tends to be placed on the material aspect of the work at the expense of other, more important aspects.

--Herbert Kohl

APPENDIX D

EVALUATING THE EFFECTIVENESS OF AN INNOVATION

The overall readiness for implementation of an educational innovation is, as we have discussed in the body of this report, a complex, multifaceted and, in some ways, ill-conceived issue. One component of this issue, however, which may be dealt with in a meaningful manner, and which is likely to be of major concern to the potential adopter is the degree to which its effectiveness in performance has been demonstrated in clinical and field tests. The recent education literature provides some insights which may aid in the assessment of demonstrated effectiveness.

The single most directly relevant source which we were able to locate was a study done for the USOE National Center for Educational Communication by the Educational Testing Service (ETS).[1] ETS convened a "nationally representative Appraisal Panel" for the purposes of: (1) assembling comprehensive information about a set of R & D products, (2) developing a set of criteria for selecting certain ones for dissemination, and (3) performing the selection process. While the purposes for which the products were selected -- focused dissemination in a single fiscal year -- are somewhat more limited than our own, the panel produced a checklist of factors that is quite valuable to us. The effectiveness of the product was defined as the

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[1] Marion G. Epstein, et al., Selection of Products for Focused Dissemination (Princeton, N. J.: Educational Testing Service, June 1971, ETS Publication #PR-71-8). This study is also discussed in Appendix E.

> extent to which the product is effective in accomplishing its stated goals in its target population _and_ in accomplishing [significant educational] goals other than those stated by its developer . . .[2]

Under this heading it was suggested that panelists examine the following factors:

(1) _Adequacy of Test Data_ -- How adequate are test data with respect to sample size, fairness of sample with respect to target population, provision of data for appropriate control groups, and objectivity of judgments about the product?

(2) _Performance in Field Trials_ -- How well did the product perform in field trials? Is there evidence that teachers and students accepted the product readily and wish to continue using it?

(3) _Internal and Background Evidence_ -- Is there internal evidence of product quality or evidence of its background (for example, previous outstanding performance of the developers in producing highly-effective products) which offers useful supplementary indications of the product's probable success or failure? Is product content appropriate to stated goals?[3]

The panel included in its evaluation of a product's effectiveness, side effects as well as achievement of intended objectives.[4] In this way, the assessment can view the product both in terms of its author's goals and in terms of the way it is actually operating. Side effects may be positive or negative. They may take the form of unanticipated benefits such as a subject text which helps to improve reading abilities; or they may appear as unsuspected undesirable effects such as "adverse emotional response". Test data may also show effects -- positive and/or negative -- on "non-target" populations.

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[2] _Ibid._, p. 32.

[3] _Ibid._, p. 33.

[4] _Ibid._

These aspects are elaborated in a number of other sources. Drawing on Donald Arnstine's suggestion that it is necessary to the learning process that students experience "an arousal in affect,"[5] Robert Wolf has encouraged that evidence be sought that the "transactions" taking place within a classroom are both "educative" and "aesthetic."[6] He would rely for such evidence on descriptions by the students themselves of their experience and on observations by teachers using a form of "intellectual intuition."[7] Such concerns emphasize the importance of the elements of student and teacher feedback contained in the ETS criteria.

Feedback will also provide an indication of the presence or absence of some of the negative side-effects an innovation might possess. While pointing to the importance of affect to the learning process, Arnstine cautions that its arousal is not sufficient for learning to occur. Some feelings which may be generated are depressants of learning:

> . . . [T]hree feelings that interfere with learning are: Discomfort, because that is a direct response to the threat of punishment implied by extrinsic motivations. Confusion because that results as a response to the presentation of certain kinds of content. And, boredom because that is felt as a response to the manner in which content is presented . . . Students who feel threatened, confused . . . [or] bored are not apt to learn very much.[8]

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[5] Donald Arnstine, Philosophy of Education (New York: Harper and Row, 1967). As cited in Robert L. Wolf, "Making Education Accountable to the Learner: A Framework for Evaluation," Journal of Research and Development in Education, Fall '71, Vol. 1, pp. 37-48.

[6] Ibid.

[7] Ibid., p. 45.

[8] Ibid., p. 41.

Evidence of discomfort, confusion, or boredom in the feedback from and concerning students (or, one might suppose, from and concerning teachers) should serve as a warning to evaluators and potential users. Whatever test scores or other numbers may show, evidence of such side-effects should be a cause for some skepticism.

Sufficient and competent testing is obviously an important element of a product's readiness for adoption, but what constitutes "adequate testing" is open to some question. The ETS panel criteria provide a skeleton outline of test adequacy considerations: (1) sample size; (2) sample fairness; (3) appropriate controls; (4) objectivity of judgment. Emphasizing the importance of objectivity, Henry Brickell would require that persons involved in the design phase of an educational product have no part in its evaluation.[9] As to the circumstances of the testing, Brickell asserts that they should be "controlled, closely observed, and unfree." Test conditions should have allowed for control or at least close surveillance over any factor which could influence the product's success. In the same vein, Egon Guba's criterion of "evidential assessment"[10] questions whether all aspects of the innovation, positive and negative, have been illustrated by the demonstrations.

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[9] Henry M. Brickell, "The Local School System and Change," in R. Miller (ed.) Perspectives in Educational Change (New York: Appleton-Century Crofts, 1966). As cited in Ronald G. Havelock, Planning for Innovation, (Ann Arbor: CRUSK, 1971).

[10] Egon G. Guba, "The Change Continuum and Its Relation to the Illinois Plan for Change for Program Development for Gifted Children." Paper delivered to a Conference on Educational Change, Urbana, March 1966. As cited in Havelock.

Specific types of factors which should be controlled for and measured in educational evaluations have been articulated by Ralph Tyler on the basis of their being "known or thought to have a significant influence . . . upon learning":[11]

> 1. Differences among students in abilities, interests, backgrounds . . . . A device, procedure, or program may prove to be differentially effective for students who differ in these respects.
> 2. Differences among significant factors in the social environment [i.e., social and cultural influences on the motivations and rewards of learning] to ascertain under which of these conditions a given [innovation] produces what kinds and degrees . . . of learning.
> 3. Peer group situations and influences . . . .
> 4. Phases in the learning process not directly related to the innovation itself. Because no device or procedure cares for all the steps in the learning process, its effectiveness . . . depends upon the extent to which it appropriately fits in with the other phases of the learning process. Evaluative studies commonly fail to control or even describe the other phases that are involved in the experimental tryouts of the innovation.[12]

The importance of this last point concerning the whole of the learning process is echoed by Melvin Tumin:

> Evaluation must include not only a determination of the end product . . . but also an understanding and appreciation of what elements of the [learning] process have contributed to what aspects of the outcome.[13]

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[11] Ralph W. Tyler, "The Problems and Possibilities of Educational Evaluation," The Schools and the Challenge of Innovation (New York: CED, 1969) pp. 76-90 .

[12] Ibid.,pp. 82-84 .

[13] Melvin M. Tumin, "Ability, Motivation, and Evaluation: Urgent Dimensions in the Preparation of Educators," in Edgar L. Morphet and David L. Jesser (eds.) Preparing Educators to Meet Emerging Needs (Denver: Designing Education for the Future, 1969).

In addition to controlling and measuring "significant factors likely to affect student learning," Tyler stresses that test data should measure the progress of each student involved in the demonstration rather than just the "average." Similarly, the project staff of Improving State Leadership in Education recommends that "evaluation should be concerned with . . . the progress of each student . . . day by day, month by month . . . ."[14]

Beyond the evidence and adequacy of formal tests, there are some further considerations and sources of information concerning the effectiveness (and readiness for adoption) of a newly-developed educational product. The ETS panel included in its ratings any "background and internal" evidence that might be available. These parallel Brickell's concerns that a "deliberate search" of basic research knowledge relevant to the product has been made and that feedback on its feasibility and appropriateness has been incorporated throughout the development process.[15] If the actual innovation or similar changes have been adopted in situations other than the controlled demonstrations, results can be compared.[16]

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[14] Edgar L. Morphet, David L. Jesser, and Arthur P. Ludka, Planning and Providing for Excellence in Education (Denver: Publishers Press/Monitor, Inc., 1971).

[15] Brickell, op. cit., pp. 10-46.

[16] Epstein, op. cit., p. 32.

Guba has pointed out the effect which the "convenience" of test demonstrations can have on the success of an innovation.[17] How accessible are descriptions and results of the demonstrations to practitioners? If a convenient body of such reference material has not been produced, it is probable that the product is not yet ready for dissemination. A related concern is contained in the ETS panel's criterion of "availability."[18] If the innovation requires special materials and/or training and if these are available in limited or sample quantities only, additional preparation is likely indicated. This latter judgment may be tempered, however, by the fact that only some limited adoption might provide the continued support necessary for complete development.

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[17] Guba, op. cit., pp. 10-44.

[18] Epstein, op. cit., p. 28.

APPENDIX E

SOURCES OF INFORMATION ON EDUCATIONAL INNOVATIONS

1. PRODUCT EVALUATION PROJECT (PEP)

PEP is a project directed by the Educational Testing Service (ETS) in Princeton, New Jersey, for USOE's National Center for Educational Communication (NCEC). It is part of NCEC's effort in dissemination and installation of new products resulting from educational research and development.[1] The original mission of the Project was to:

> . . . assemble comprehensive information about these products, to evolve a set of criteria for use in selecting from among them those to be recommended for NCEC 'focused' dissemination attention, and to execute a two-step selection procedure, to identify products for extended review and analysis and to recommend products upon which NCEC might focus its dissemination and installation efforts.

In 1971, the first year of the Project, a nationally representative appraisal panel was convened to accomplish this mission. For that year, the PEP product pool was limited to the products of projects sponsored by the National Center for Educational Research and Development (NCERD) and certain other USOE programs. Plans for the 1972 PEP selection process are to expand the product field to allow for inclusion of some products which were not developed under the auspices of USOE.

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[1] Products, in this context, are broadly defined to include "curricula and systems that enhance the learning of students or the operation of educational organizations".

A report on the results of the efforts of the 1971 appraisal panel is contained in Marion G. Epstein, Elizabeth H. Margosches, William B. Schrader, and Wesley W. Walton, Selection of Products for Focused Dissemination (Princeton, N. J.: Educational Testing Service, June 1971, ETS publication #PR-71-8). We discuss some of the selection criteria developed by the panel in more detail in Appendix D of this report. The nine products recommended by the panel to NCEC for dissemination in FY 72 are:

A. Effective Questioning -- Elementary Level (Minicourse I).
An auto-instructional teacher training package. Developed at Far West Laboratory for Educational Research and Development, Berkeley, California.

B. Parent/Child Toy Lending Library.
Designed to serve parents whose income is above OEO guidelines for Head Start but who cannot afford nursery schools for their three- and four-year-old children. Includes a course for parents and toys integrated into learning episodes to put out on loan. Developed at Far West Laboratory for Educational Research and Development, Berkeley, California.

C. Multi-Unit Elementary School (MUS).
Organizational plan for instruction and administration on the school building level to make possible adequate provision for differences among students in rate of learning, learning style and other characteristics. Developed at Wisconsin R & D Center for Cognitive Learning, Madison, Wisconsin.

D. Cooperative Urban Teacher Education (CUTE).
Curriculum providing 16 weeks of full-time interdisciplinary field experiences for college students majoring in education

who plan to teach in urban school systems. Developed at Mid-Continent Regional Educational Laboratory, Kansas City, Mo.

E. Teaching of Science: A Self-Directed Personalized Teacher Education Program.

Self-directed learning program for elementary and middle school teachers. Developed at University of Texas, Austin, Texas.

F. Match Box -- Materials and Activities for Teachers and Children.

Self-contained, multi-media kits designed to enable elementary school teachers and children to learn and communicate through primarily nonverbal means. Developed at The Children's Museum, Boston, Massachusetts.

G. Individualizing Instruction in Mathematics (Minicourse 5).

Self-instructional program to improve teachers' skills in the individual tutoring of pupils who are deficient in an understanding of mathematical concepts and alogorithms. Developed at Far West Laboratory for Educational Research and Development, Berkeley, California.

H. Reinforced Readiness Requisites Program (RRR).

Approximately 157 lessons designed to alleviate academic deficiencies shared in common by children from a culture of poverty at kindergarten and first-grade levels. Developed at Southwestern Cooperative Educational Laboratory, Albuquerque, N. M.

I. First Year Communications Skills Program (FYCSP).

Comprehensive set of highly organized materials and procedures designed to teach the basic skills in English language communication to kindergarten students. Developed at Southwest Regional Laboratory, Inglewood, California.

2. EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

The ERIC information system of USOE/NCEC contains a number of means by which one can gain entrée to the vast amount of available information on educational R & D and innovative practice.[2] The following is a list of several such ERIC reference collections and special reports:

A. Pacesetters in Innovation

Resumes of ESEA Title III projects aimed at advancing creativity in education. Entries are indexed by subject, local educational agency, and project number. Individual volumes have been issued for each fiscal year from 1966 through 1969. A cumulative issue, Fiscal Years 1966-1969 is available from the U. S. Government Printing Office (GPO Order Number: OE-20103-69).

B. ERIC Catalogue of Selected Documents on the Disadvantaged

1,746 documents, through the year 1966, dealing with the special educational needs of the disadvantaged are indexed in two volumes by author, document number, and subject. (Number and Author Index - GPO Order Number: OE-37001; Price: $0.65). (Subject Index - GPO Order Number: OE-37002; Price: $3.00).

C. PREP Reports

Each PREP (Putting Research into Educational Practice) report is "a synthesis and interpretation of research, development, and current practice on a specific educational topic". Originally published on an occasional basis, PREP reports are now issued monthly. Subscriptions are available from the Superintendent of Documents for $6.00 per year. Individual copies of reports 1-23 can be ordered through the ERIC Document Reproduction Service in microfiche ($0.65) or hard copy ($3.29). Reports 24 to date are available from U.S.G.P.O. for $0.55 each. The titles and numbers of PREP reports issued so far are:

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[2] As of February, 1972, a major national effort was underway to evaluate the information products of NCEC, including ERIC. System Development Corporation was performing this evaluation, which was being carried out in part through questionnaires to approximately 5,000 educators throughout the country.

1. Instructional Television Facilities: A Guide for School Administrators and Board Members (ED 034 077)*
2. Reading Difficulties: Reading and the Home Environment. The Principal's Responsibility (ED 034 078)
3. Establishing Central Reading Clinics: The Administrator's Role (ED 034 079)
4. Correcting Reading Problems in the Classroom (ED 034 080)
5. Treating Reading Disabilities: The Specialist's Role (ED 034 081)
6. Bilingual Education (ED 034 082)
7. School-Community Relations: Research for School Board Members (ED 034 083)
8. Teacher Militancy, Negotiations, and Strikes: Research for School Board Members (ED 034 084)
9. Job-Oriented Education Programs for the Disadvantaged (ED 034 085)
10. Seminar on Preparing the Disadvantaged for Jobs: A Planning Handbook (ED 034 086)
11. Research on Elementary Mathematics (ED 034 087)
12. Paraprofessional Aides (ED 034 906)
13. Sharing Educational Services (ED 036 666)
14. Social Studies and the Disadvantaged (ED 037 588)
15. Student Participation in Academic Governance (ED 038 555)
16. Individualized Instruction (ED 041 185) (Hard copy, $6.58)

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* ED numbers for 1-23 should be used when ordering through EDRS.

17. Microteaching (ED 041 190)
18. Reinforcing Productive Classroom Behavior: A Teacher's Guide to Behavior Modification (ED 042 061)
19. Migrant Education (ED 042 936)
20. Teacher Recruitment and Selection (ED 043 797)
21. Teacher Evaluation (ED 044 546)
22. A Readiness Test for Disadvantaged Preschool Children (ED 047 168)
23. Educational Cooperatives (ED 048 521)
24. School-Community Relations and Educational Change
25. Improving Teaching Effectiveness
26. Black Studies in Community Colleges
27. Year-Round Schools -- The 45-15 Plan
28. Educational Performance Contracting

D. Office of Education Research Reports, 1956-1965

Research reports received before the publication of Research in Education. Compiled in two volumes: Resumes (GPO Order Number: OE-12029, $1.75) and Indexes of reports by author, institution, subject, and report number (GPO Order Number: OE-12028, $2.00).

E. Research in Education (RIE)

Monthly abstract journal reporting recently completed research reports, descriptions of outstanding programs and other documents of educational significance. There is also a section on research projects newly funded by USOE. RIE is indexed by subject, author or investigator, and institution. Each year, semi-annual and annual cumulative indices are also published.

F. Current Index to Journals in Education (CIJE)

Monthly guide to the periodical literature, with coverage of more than 500 major education and education-related journals. It contains a main entry section with annotations; and it is indexed by subject and author. Semi-annual and annual cumulative indices are also published.

3. DIVISION OF EDUCATIONAL EXTENSION SYSTEMS, USOE

Formerly the Division of Practice Improvement, this branch of USOE directs its efforts toward such ends as the display of tested products and practices, the development of state and local information networks, and expansion of the educational knowledge base. Two of its current programs are of particular interest to those concerned with securing information on educational innovation:

A. Pilot State Dissemination Project

In FY70, three states (Oregon, Utah, and South Carolina) received ESEA Title IV funds to support the development of extensive state-wide educational information networks. The object was to make the broad scope of such information easily accessible to local school systems through the development of three network components--administration and management, information retrieval, and local field agents. Since the beginning of the project, the programs in the three original states have been refunded and a number of additional grants have been awarded to both other states and some local operations where development of one or more of the network components is taking place.

B. Promising Practices Data Bank

In October of 1971, ERIC dissemination representatives in each state were requested to contact educators and school systems throughout their state for information on innovative practices and products currently in use. Upon receipt of this information, state representatives will perform a first-cut evaluation and make nominations to the Division of Educational Extension Systems for inclusion in a national Promising Practices Data Bank. The program is yet in a very early stage; projections are that a preliminary catalogue of nominees for the promising practices pool will be available by the end of 1972. Operation of the data bank should begin on a pilot project basis sometime in FY74.

4. NORTHERN COLORADO EDUCATIONAL BOARD OF COOPERATIVE SERVICES (NCEBOCS). INFORMATION RETRIEVAL CENTER (IRC).

The Information Retrieval Center is funded by USOE under the Cooperative Research Act and NCEC/ERIC, and by ESEA Title III through the Colorado Department of Education. The Board of Cooperative Services exists to provide a variety of services to the educational community it serves in the areas of: Program Development, Program Evaluation, Data Processing, Information Retrieval, and Multi-Media Programs. Seven Colorado school districts are served.

IRC is unique in that it also serves other states (through Departments of Education) in a growing network of information retrieval. These states include: Colorado, South Dakota, Utah, Washington, Wyoming, Oregon, North Dakota, Kansas, Idaho, and Montana. Contractual information services are provided for the New England Resource Center for Occupational Education, and the Texas Educational Renewal Center serving the Austin area. Additional requestors are served on an individual basis.

IRC offers its educational requestors both automated and manually searched information products. These products include PET (PACKETS OF EDUCATIONAL TOPICS), CAT (CATALOG OF COMPUTERIZED SUBJECT SEARCHES), CAP (CURRENT AWARENESS PROFILES), and SID (INDIVIDUALIZED SEARCHES IN DEPTH). (IRC's address and telephone are: 1750 30th St., Suite 48, Boulder, Colorado 80301. (303) 444-4987.)

5. DIRECTORY OF EDUCATIONAL INFORMATION RESOURCES (Compiled by Judy Wagner. New York: CCM Information Corporation, 1971.)

This book is a revised and updated edition of the Directory of Educational Information Centers (Washington: U. S. Government Printing Office, 1969). Section I ("Local Resources") lists organizations and agencies in each state involved in the educational information dissemination and diffusion process. Section II ("National Resources") lists services available to a multi-state or national area such as ERIC, USOE Regional Offices, and National Associations. Each entry in these two sections provides the following data: name of center; address and telephone; name and title of director and/or head of information services; founding date; sponsor or parent organization; purpose; services and products; users; and holdings.

A third section ("Guides to Organizational Resources in Education") contains a bibliography of reference material containing more specialized information.

6. "GRASSROOTS" INFORMATION SOURCES

Apart from the several information centers and organizations which are supported and/or operated by governmental agencies and large professional associations, there is a large and growing number of private independent educational information sources, generally associated with the alternative schools movement. One such is the New Schools Exchange at 701B Anacapa, Santa Barbara, California 93101. The

Exchange publishes a newsletter each month (except July), distributes a Directory of Innovative Schools and "provides advice, contacts, and information." A National Directory of Alternative Schools is also available from a group in the Boston area ("New Schools Directory," c/o Sama, 47 Payson Road, Belmont, Mass. 02178; $1.25). This directory and the New Schools Exchange Newsletter (No. 65, September 30, 1971) both provide lists of sources of information, advice, and assistance (termed "clearinghouses" and "switchboards") on alternative education. We have taken the liberty of integrating and reproducing these lists (grouped by region) here for the benefit of our readers.

EAST

Clearing House on Student Initiated Change in Higher Education
School of Education
University of Mass.
Amherst, MA 01002

The Education Center Centerpeace
57 Hayes St.
Cambridge, MA 02139

High School Student Info Center
3210 Grace St., N. W.
Washington, D. C. 20007

John Holt Associates
308 Boylston St.
Boston, MA 02116

KOA-Communications on Alternatives
2411 Lorillard Place
Bronx, N. Y. 10458
  Also listed as:
  c/o Arrakis
  R.F.D. #1
  Jeffersonville, N.Y. 12748

Long Island Free School Exchange
55 Hartwell Place
Woodmere, N.Y. 11598

New Jersey Alternative School Foundation
Terry Ripmaster
16 Crestwood Dr.
Glen Rock, N. J. 07452

New Schools Rising
c/o Leap
540 E. 13th St.
New York, N. Y. 10009

The Red Pencil (paper)
131 Magazine St.
Cambridge, MA 02139

Rochester Educational Alternatives
80 Edgerton St.
Rochester, N.Y. 14607

Summerhill Collective
137 W. 14th St.
New York, N.Y. 10011

EAST (Cont.)

Summerhill Society
339 Lafayette St.
New York, NY 10012

The Teacher Center
470 Talbot Ave.
Dorchester, MA 02124

Teacher Drop-Out Center
Box 521
Amherst, MA 01002

Unschool of New Haven
P.O. Box 1126
New Haven, CT 06505

Washington Area Free School Clearinghouse
1609 19th St. N.W.
Washington, DC 20009

MIDWEST

Chicago Teacher Center
852 W. Belmont, Rm. 2
Chicago, IL 60657

Clearinghouse
University of Minnesota
Student Activities Bureau
110 Temporary North of Mines
Minneapolis, MN 55455

David Clements
662 W. Canfield
Detroit, MI 48201

Communiversity
Jim White
University Center
5100 Rockhill Rd.
Kansas City, MO 64110

Terry Doran
The Fort Wayne Folk School
P.O. Box 681
Fort Wayne, IN 46801

Education Exploration Center
3104 16th Ave., S.
Minneapolis, MN 55407

Eric-Clearinghouse on Early Childhood
Education
University of Illinois at Urbana-Champaign
805 W. Pennsylvania Ave.
Urbana, IL 61801

Minnesota Summerhill Society
Box 271 Spray Island
Spring Park, MN 55384

New Earth Services
Hiram, OH 44234

New School News
407 Dearborn St.
Chicago, Ill.

Vocations for Social Change
139 Student Services
Michigan State University
East Lansing, MI 48823

Rec-Clearinghouse
Prof. Milton Powell
Justin Morrill College
Michigan State University
East Lansing, MI 48823

WEST

Alternatives for Education
P.O. Box 1028
San Pedro, CA 90733

Alternatives Foundation
1526 Gravenstein Hwy. No.
Sebastopol, CA 97452

Apprentices
c/o Trolin
115 Merrill St.
Menlo Park, CA 94025

Association for Humanistic Psychology
(Higher Education Only)
584 Page Street
San Francisco, CA 94117

Bay Area Radical Teachers Organizing Committee
1445 Stockton Street
San Fransisco, CA 94133

Community Free School, Inc.
1030 13th St.
Boulder, CO 80302

East Bay Ed. Switchboard
805 Gilman
Berkeley, CA 94710

Educational Alternatives Study Group
13240 Challon Road
Los Angeles, CA 90049

Ed. Switchboard Marin
1299 Fourth St., Suite 308
San Rafael, CA 94901

Experimental Schools Corp. of Arizona
P.O. Box 2735
Tucson, AR 85702

The Learning Center
c/o Exploring Family School
Box 1442
El Cajon, CA 92020

New School Movement
402 15th Ave., East
Seattle, WA 98102
Also listed as:
117 Madrone Place, E.
Seattle, WA 98102

New Schools Network
3039 Deakin St.
Berkeley, CA 94705

Rio Grande Educational Assn.
P.O. Box 2241
Santa Fe, NM 87501
Also listed as:
Box 476
Bernalillo, NM

San Francisco Ed. Switchboard
1380 Howard St.
San Francisco, CA 94103

The Teacher Paper
3923 S. E. Main St.
Portland, OR 97214

Vocations for Social Change
Box 18222
Capitol Hill Station
Denver, CO 80218

SOUTH

Learning Resources Exchange
4552 McPherson
St. Louis, MO 63108

FPS
1217 Wichita St.
Houston, TX 77004

Free School Switchboard
319 E. 25th St.
Baltimore MD 21218

Free U. Clearinghouse
Jane Lichtman
53 Stanley Rd.
S. Orange, NJ 07079

The Innovative Education Coalition
1130 N. Rampart St.
New Orleans, LA 70116

Stonesoup School
428 Semoran Blvd.
Altamonte Springs, FL 32701

SWERC (Southwest Education Reform
Community)
Cindy Bush
3505 Main St.
Houston, TX 77002

CANADA

Saturna Island Free School
Saturna, B.C., Canada

This Magazine Is About Schools
56 Esplandade St., E.
Suite 301
Toronto 215, Ont., Canada

Finally, on the subject of alternative education, the President's Commission on School Finance has recently published (November 1971) a report prepared for it by Bruce S. Cooper, entitled "Free and Freedom Schools: A National Survey of Alternative Programs." This volume describes several models of alternative schools, examines difference, commonalities, and patterns of governance, finance, etc. Also included is another listing of clearinghouses and extensive bibliographies on community schools and alternative schools.

7. ALTERNATIVE FUTURES FOR LEARNING (Compiled by Michael D. Marien. Syracuse, N. Y.: SURC Educational Policy Research Center, 1971.)

A bibliography of educational reform source material. More than 900 entries cover elementary, secondary and higher education, as well as broader cultural areas. The complete bibliography is 223 pages and is available at a cost of $5.00. An abridged 71-page version costs $1.50. (Address: 1206 Harrison St., Syracuse, N. Y. 13210.)

APPENDIX F

SELECTED BIBLIOGRAPHY

References included in this bibliography are organized under six general headings: (1) General Research and Development; (2) Educational Research and Development; (3) Planned Social Change; (4) Planned Educational Change; School Community Relations; (5) Innovation; and (6) Educational Needs and Goals.

The categories of the several sections are admittedly a bit arbitrary and are intended merely as a crude guide to readers' particular interests. The categories are far from being mutually exclusive, and a number of the references would properly be placed in more than one of them. An attempt to indicate such broader applicability has been made by citing additional category section numbers in parentheses following some entries.

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APPENDIX G

TWO STRATEGIES FOR PROMOTING PLANNED EDUCATIONAL CHANGE*

The League of Cooperating Schools

This strategy for educational change grew out of a rather unusual study conducted by the Institute for Development of Educational Activities (/I/D/E/A/) in cooperation with the University of California at Los Angeles and 18 independent school districts in Southern California. The project was unusual in that it did not promote any specific changes per se; the sole purpose was to develop conditions in which change suited to the needs of the individual schools would be generated and nourished.

The spectre of "experts in education" haunted the directors of the Study of Educational Change and School Improvement from the beginning. The typical pattern of intervention by "expert" change agents seemed to be: (1) the establishment of an expert-consultant/ school-client relationship; with (2) a single school; which (3) is highly dependent on higher offices in its school district for resources; and (4) is in competition with other schools in its district; and finally, (5) evaluation of the success or failure of implemented changes by outside agents. Too frequently, the effect of this pattern of dual dependency was for much of the change achieved during the duration of the consultant/client relationship to be eroded as the school began again to conform to the norms and expectations of the school district system. Further, what improvements did survive the "experts'" leave-taking very often remained confined to their original sprouting ground.

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* The strategies described here in brief are, to be sure, only two of a very large number of strategies for bringing about change in schools (not to mention the even larger number of social change strategies which have been articulated). They are, however, particular strategies which have come to our attention which put specific emphasis on many of those elements described as salient to meaningful educational change in the body of this report. More information on the /I/D/E/A/ study and strategy can be obtained by contacting the Institute for Development of Educational Activities, Inc., Los Angeles, California, and by consulting the references given at the end of this appendix. For further information on Project Redesign, contact the office of Bernard F. Haake, Assistant Commissioner for Instructional Services, New York State Education Department, Albany, New York 12224.

In spite of this frustratingly familiar record of would-be change agents, "experts" at /I/D/E/A/ took upon themselves the role of interventionists. They were guided by the concept of John I. Goodlad, Director of the Research Division, that each individual school is an "organic whole," possessing within itself all of the fundamental resources needed to generate meaningful change. A convincing argument could be made that most previous efforts at intervention fell short of possible successes because available resources had not been developed and that the socialization of school staffs to the changes and the change process had been incomplete. This provided the rationale for an intervention strategy based upon a peer socialization model.

In 1966, the League of Cooperating Schools was established. Its membership was composed of the staffs of one school each from 18 separate school districts and education "experts" from /I/D/E/A/ and UCLA. The schools in LCS were at once both the target of change efforts and the tool by which it was hoped change would be encouraged. They were to form an additional social system to counter the pressures for conformity and stability which tended to dominate the school districts to which they already belonged. The new social system was to provide expectations and norms conducive to innovative behavior and change.

The main role for the self-effacing experts in LCS was to simultaneously foster a group of schools with innovative values and to increase the importance of belonging to the new group for its members. Meetings of the whole group and sub-groups, formal and informal contacts, face-to-face communication and communication at a distance, always emphasizing the identification of common problems, possible alternatives, successful and failed solutions of the past -- these were major components of the strategy. The importance of belonging to the group was increased by the development of roles in which members were decision-makers and in which they could act as resources to outside groups. Considerable effort was given to disseminating information by and about the group to a wide audience.

Another role played by the people from /I/D/E/A/ was to make research data and products and training available to the participating schools. This was an important but minor role. Access to the new knowledge and skills required by those who will effect change is a necessity.

The success of LCS, however, was staked on the ability of the schools themselves to plan for, implement, and see change through.

At the end of the Study of Educational Change, researchers at /I/D/E/A/ found a good deal of evidence that the peer socialization strategy had provided strong moral support for participating school staffs, that they were more willing to experiment, and that teachers and principals could function as useful resources for one another. At the conclusion of the study itself, 14 of the 18 schools received funds from their school districts to maintain the LCS association. The peer group intervention strategy has also been adapted by the Innovative Programs Division of /I/D/E/A/ in conjunction with a nation-wide program in Individually Guided Instruction.

Project Redesign

New York State's Project Redesign parallels /I/D/E/A/'s Study of Educational Change in its concern for creating a self-renewing educational system rather than working with any one or two specific innovations. Impressed by the exigencies of a rapidly changing modern society where new knowledge is created at a fantastic rate and people are required to work in and with a continually shifting social and occupational matrix, the New York State Education Department began, in 1969, an intensive reexamination of the State's elementary, secondary, and continuing education.

Their guiding rationale was the need to provide students with "the skill and joy of learning to learn.....and of mastering change as well as equipping them with the current knowledge and disciplines of our society."

New York Commissioner of Education Ewald B. Nyquist summarized the unique characteristics of the Project in a speech given in May, 1970: Redesign is a strategy which adapts a comprehensive systems approach to planning. It means redesigning the total system of education; everything is to be scrutinized. Redesign starts by looking ahead, engaging in an analysis of the future. The strategy includes development of criteria for evaluating proximate goals and tactics proposed to meet those ends. All segments of the community participate in the analysis of the future definition of needs and statement of goals. All segments of the community participate in specifying the characteristics of the new system of education. The new system will incorporate goals and criteria for judging progress and selecting tactics. The emphasis on local redesign requires a different kind of community involvement.

The basic strategy was to carry on redesign efforts simultaneously at three levels: (1) in several local "prototype districts"; (2) through BOCES/Regional Center agencies; and (3) at the level of the State Education Department itself.

Four categories "typical" of school districts in New York were identified -- rural, suburban, small city, and inner city. Using such criteria as a change-oriented superintendent, cooperative board-administration relationships, teachers committed to continuing development, and community support of educational leadership, one district of each category was selected as a prototype for redesign.* Each is following an individualized pattern for redesign appropriate to local circumstances, needs, and aspirations, and each is presently at a different stage in the process. Efforts in all of the districts have been guided, however, by the same five major goals: (1) Establishment of a community apparatus to manage redesign. (2) Community stimulation programs to acquaint people throughout the community with the basic aims of redesign and to engender discussion of local problems and goals. (3) Identification of planning projects which will involve both school and community people. (4) Development of methods for internal communication and documentation of the redesign process. (5) Establishment of working relationships with the local Regional Center and BOCES and identification of specific tasks through which these agencies can aid the local district's effort.

The BOCES/Regional Center apparatus, in addition to its support for prototype districts, serves Project Redesign as a Regional Redesign Network. It provides an intermediate link between the State Education Department and each of 750 school districts in the State -- a link necessary in recognition of the facts that redesign one district at a time is wholly unacceptable in terms of time and that the resources being concentrated in the prototype districts could not be made available throughout the State.

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* Cassadaga Valley (rural), Greece (suburban), Watertown (small city), and District #7-Bronx (inner city).

A State Education Department Regional Redesign Network Coordinator has been appointed and several specific objectives are being pursued by this intermediate link. Regional thinking about total system planning for the future is being stimulated. All public and private schools in each region are receiving Redesign information, materials, and progress reports. Each region is developing a local apparatus for linking regional redesign efforts among themselves and with the State agency. And a secondary network of Redesign Schools is being set up on a regional basis.

Within the State Education Department, an Executive Redesign Council has been established and five State Coordinators have been assigned to work directly with the prototype districts and with the Regional Network. In addition, a management consulting firm has been contracted to provide additional assistance to the prototype districts and coordinators. The major components of the Department's role in Redesign are: (1) To provide resources and support for the prototype districts and regional redesign efforts; (2) To reshape the Department's role and capabilities for greater effectiveness in the new system of education; and (3) To evolve with the legislative and executive branches of the State government a new pattern of laws and regulations to accommodate the new system.

An interesting comment on the difficulties involved in an effort such as Redesign is the admission by State Education Department officials of the problems they have had in establishing credibility in Redesign as a Department priority and overriding the suspicion that it was another effort by the Department to dominate local districts. Commissioner Nyquist has repeatedly avowed the Department's sincere intention to make a long-range effort to support change in every school district in the State, change which will be appropriate to the requirements of each district as well as to the needs of society and the future.

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